# The Causes, Character and Consequences of Economic Growth in Canada, 1974-2008: A Classical Political Economic Analysis

Geoffrey Robert MacBride McCormack

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**Abstract**

This dissertation explores the dynamics of capital accumulation in Canada over the last four decades, including the long downturn from 1974 to 1990, the subsequent slump, and the long upturn from 1993 to 2008. To this end, it examines in great detailmovements in the rate and mass of profit as well as their reflection in the marginal efficiency of capital (MEC). Building upon the theoretical framework developed by Henryk Grossman and refined by Anwar Shaikh, it demonstrates that a downward sloping MEC accounts for the escalating severity of crises in the period 1974-1989 and that the "Great Canadian Slump" of 1990-92 was a result of a shrinking and subsequently stagnating mass of profit. The depth and breadth of the crisis of 1990-92 created an environment conducive to the re-establishment of accumulation beginning around 1993. As real wages and the price of machinery and equipment fell, the re-organisation of production was made possible. Profound industrial restructuring alongside the cheapening of transportation, telecommunication and business-computing equipment helped to consolidate just-in-time (JIT) production systems and the usage of information communication technologies (ICT) in industrial processes. In turn, these historical processes reversed the tendencies of decline: the rate and mass of profit began to grow alongside the MEC, business investment picked up, real wages rose and a long period of sustained accumulation got underway from 1993 to 2008.Furthermore, the consolidation of JIT and ICT profoundly changed the character of inventory control and investment. In particular, businesses were able to hold lower levels of inventory and these new technologies and organisational forms resulted in fewer disruptions along the supply chain. Hence, there was a reduction

of fluctuations in inventory investment and thusthe overall pattern of economic growth.The last chapter argues that the aforementioned historical processes underlay the stability of Canada's banking sector during thecrisis of 2008-09. Conventionally, Canada's sound banking system is viewed as the principal factor underlying economic stability in this period. Contrary to this position, the chapter argues that the stability of the banks was a function of the long phase of stable capital accumulation preceding the crisis.

To my parents, Joanne MacBride and Peter McCormack

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## Table of Contents

## List of tables

## List of figures

Panic of error is the death of progress; and love of truth is its safeguard.[1]
– Alfred North Whitehead

Who holds his peace will by few cares be wrung;
Ambushed the man lies underneath his tongue.[2]
– Johann Wolfgang von Goethe

## Introduction

This dissertation examines the causes, character and consequences of economic growth in Canada over the last four decades from the standpoint ofclassical political economy.It comprises a collection of studies on capitalism in Canada covering the years 1974-2008. These studies scrutinise the dynamics of growth and change during the long period of instability beginning in the mid-1970s, followed by the long period of stability beginning after the "Great Canadian Slump" of the early 1990s. Along the way, it discusses important transformations in the Canadian economy throughout the 1980s, 1990s and 2000s, including the introduction and proliferation of "just-in-time" production and distribution systems as well as information communication technologies. The story ends with the "Great Recession" of 2008-09 and the role of Canada's banking system and recent patterns of capital accumulation in determining the outcome of the crisis. The dissertationattempts to demonstrate how the "laws of motion" explored by Karl Marx in the three volumes of *Capital*, further developed by Henryk Grossman in *The Law of Accumulation and Breakdown of the Capitalist System*and elaborated by Anwar Shaikh over the last four decadesexpress themselves concretely within this period ofCanadian

[1] A. N. Whitehead, *Modes of Thought* (New York: The Free Press, 1966): 16.
[2] Johann Wolfgang von Goethe, *West-Eastern Divan*. Translated by Edward Dowden. (Toronto: J.M. Dent & Sons Ltd., 1914): 85.

economic history. To this end, it applies a model of "long waves" rooted in classical Marxist theory.

The dissertation belongs to a tradition mostly lost to academia. In accordance with the Greek cosmological view, it takes seriously the idea that "the excellence of the citizen must be an excellence relative to the constitution ... But the good man is a man so called in virtue of a single absolute excellence."[3] The dissertation is undoubtedly a shining example of bad citizenship, especially concerning its attitude towards economic orthodoxy. Optimal returns appear to occur on the margins of the economics profession. With regard to the latter, the work falls squarely in the Classical Marxist camp of heterodox economics and, as such, openly and self-consciously disregards the orthodox division of the academy into distinct disciplines that occurred towards the middle of the nineteenth century.[4] It is interdisciplinary and hence makes contributions to economic theory, history and policy.

In the first part of this introduction, I briefly outline the distinct methodological approach followed in this dissertation. In the second section, I provide a brief overview of the chapters. The purpose of this is two-fold. To repeat what was said above, the dissertation is a collection of studies. As such, there is some overlap with regard to content and little "connective tissue" between the chapters. There is, however, a logical and chronological ordering involved. The purpose of the second section is to give the

[3] Aristotle, *The Politics* (London: Oxford University Press, 1958): 101-2.
[4] Eric R. Wolf, *Europe and the People without History* (Berkeley: University of California Press, 1982): 7-19.

reader a sense of the content of the dissertation and to demonstrate how these chapters fit together. Let us now turn to the question of methodology.

**Methodology**

It would be impossible to understand capitalism's long and short-run dynamics without an understanding of the role of economic crisis in them. Indeed, the latter figures centrally in this dissertation. It is also a useful starting point for the discussion of the methodology employed in this dissertation.

Makoto Itoh notes that two analytical approaches to crisis theory are open to Marxists. The first "is to treat the various strands of crisis theory ... as a toolbox from which concepts can be selectively employed to analyse historically specific instances of capitalist economic crisis" and "the second approach is to adopt one of the strands of Marxist crisis theory."[5]In the "toolbox" approach, capitalist development is seen as "a contradictory process prone to crises, the genesis, nature and outcome of which are historically contingent."[6]To be sure, from this standpoint no "law of crisis" can be "drawn across the history of capitalism."[7]In other words, periods of stability or instability are treated as system paths that "are contingent on historically specific forces and balances of power."[8]Undoubtedly, the toolbox approach can offer significant empirical insights into the history of capitalist development, but often at the expense of theoretical clarity.

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[5] Makoto Itoh and Costas Lapavitsas, *Political Economy of Money and Finance* (London: MacMillan Press, 1999): 127.
[6]Leo Panitch& Sam Gindin.Capitalist crises and the crisis this time.In L. Panitch, G. Albo, V, Chibber (Eds.) *Socialist Register 2011: The Crisis This Time.* (New York: Monthly Review Press, 2010): 5.
[7] Greg Albo, Sam Gindin & Leo Panitch, *In and Out of Crisis: The Global Financial Meltdown and Left Alternatives* (Oakland: PM Press): 39.
[8] Anwar Shaikh, "The Power of Profit." *Social Research*, 71, No. 2 (2004): 7.

The treatment of Marxism as toolbox rather than a science that has made definite discoveries about the laws of motion of capitalist development – its logical ordering and tendencies – arises from a neglect of methodological considerations. There is an unfortunate tendency in Marxism to rip this or that concept out of the context of the whole and then attempt to shed light on this or that empirical circumstance by means of that concept. This is contrary to Marx's method. In fact, it has much more in common with the ahistorical application of concepts in neoclassical economics, which attempts to *externally* relate concepts to particular historical situations.

Itoh rightly points out that "the labour theory of value is the cornerstone of Marx's theoretical system in economics."[9] Value categories reflect essential social relationsthat exist acrossall epochs within capitalism. Therefore, these categories must be included in our analyses of capitalist periods and crisis. To be sure, we cannot pick and choose this or that concept or process because it appears more useful than another in describing the phenomena of a particular historical period. Instead, we must start from the system of concepts as a whole. As Marcuse notes, "the notion of capitalism is no less than the three volumes of *Capital*."[10]In other words, Marx developed a system of interlinking concepts that do not fare well in isolation from the system of thought as a whole. Moreover, the concepts of Marx's *Capital* are *historical* concepts.McNally writes,

> The theoretical categories of Marx's value theory are ... historical precipitates from the start. As a result, history does not need to be added to these categories; it is embedded in them. Unlike theories that begin with the asocial and ahistorical premises of neoclassical economics, Marxian value theory does not encounter history as an alien continent that must subsequently

[9] Itoh, *Political Economy of Money and Finance,* 33.
[10] Herbert Marcuse, *Reason and Revolution* (New York: Oxford University Press 1960): 159.

> be conquered; it does not commence with a core theory that is inherently resistant to historicisation and the priority of social relations of production and reproduction.[11]

Because they are *historical* concepts, they *presuppose* and *embody* the totality of social relations of which they are a part. To put it differently, in order to capture the process of reality,these concepts are*relational.* Alfred North Whitehead summarises this approach when he notes that "each fully realized fact has an infinitude of relations in the historic world ...The data for any one pulsation of actuality consist of the full content of the antecedent universe as it exists in relevance to that pulsation."[12]Likewise, Marxist concepts belong to a *systemof conceptsr*eflecting a definite *order of reality* and for this reason cannot be considered in isolation from one another. To be sure, we cannot pick and choose this or that concept or process because it appears more useful than another in describing phenomena. Instead, we must start from the system of concepts as a whole. We can choose to examine reality from the *standpoint* of a particular concept, but if we are to reproduce the concrete in thought, this concept must not be abstracted from its *context*. Relational concepts are embedded in a system of concepts. Analysis of capitalism should always proceed by moving from the most important categories – e.g. value, surplus-value, composition of capital, etc. – to the historically contingent. For instance, some thinkers have argued that the Great Recession of 2008-09 was not rooted in problems of profitability. They point to high profits in the period immediately preceding the crash. However, high profits in 2006-07 do not preclude *over-*

[11] David McNally, "From Fetishism to `Shocked Disbelief': Economics, Dialectics and Value Theory." Historical Materialism, 20, No. 3 (2012): 9-23.
[12] Whitehead, *Modes of Thought*, 89.

*accumulation* as the underlying reasonfor the *depth, breadth and persistence* of the global crisis. From the standpoint of value theory, conjunctural high profits are entirely compatible with a long-run secular decline in profitability and systemic instability. For instance, George Cooper points out that "additional borrowing from whatever source will, all else unchanged, tend to boost corporate profits."[13] For reasons like this, precluding problems of profitability first requires a close examination of indicators like the organic composition of capital and long-run movements in the rate and mass of profit in order to separate out long-run from short-run dynamics (the mass of profit in fact began toshrink in the U.S. in the fourth quarter of 2006, a sign of overaccumulation as we will see in Chapter 1).[14] We are then in a better position to understand historic events like the Global Financial Crisis of the late 2000s.

The Marxist system of concepts reflects the definite order of reality. From this perspective, social reality consists of *essential* and *phenomenal* social relations. In other words, the multitude of phenomena that confronts us in each epoch belie what is common across epochs; that is, the essential. The error of the toolbox approach is to treat historically contingentevents with the same importance as more fundamental relations or even to the neglect of the latter. For Marx, capitalist social relations – as reflected in the categories developed in *Capital* of surplus-value, the organic composition of capital and so on – reflect *essential* social relationships at the highest level of importance. These categories are *essential* and they are also the least readily apparent. The power of

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[13] George Cooper, *The Origins of Financial Crises: Central Banks, Credit Bubbles and the Efficient Market Fallacy* (New York: Vintage Books, 2008): 118.
[14] Bureau of Economic Analysis, "Table 6.16D. Corporate Profits by Industry, Domestic industries." Accessed December 31, 2012. http://www.bea.gov/

abstraction must discover them, but this does not negate their actuality. The categories are both *essential* and *real* and as such have a bearing on the historical process.

These same relations form the kernel of the capitalist system and cannot be considered except by reference to the system as a whole in its concrete totality. In other words, the same method that forces us to transcend the phenomena of everyday life to discover the abstract essential relations of capitalism – because of their *relational character* – forces us "back down" to examine the ways in which these abstract categories manifest themselves concretely through a series of mediations. This is Marx's famous double movement of ascent from the real concrete and the complex world as it appears to us initially to the abstract and simple categories, followed by the organisation of the system of concepts to correctly reflect its real ontological layering. The aim is to reproduce the concrete and complex in thought *in a new ordered conceptual totality.* In other words, theory must move methodically from the abstract categories discovered by Marx to the concrete historically-specific phenomena that confront us, including all of the mediations and transformations along the way.[15] In this regard, Henryk Grossman writes:

> The task of all science is to investigate and understand the given concrete totality of phenomena, their connection and their changes. The difficulty of this task is that phenomena do not directly coincide with the essence of things. Investigation into the essence is the prerequisite for understanding the world of appearances. If contrary to vulgar economy Marx wants to discover the "hidden essence" and the "inner connection" of economic reality ... this does not mean that concrete appearances do not interest him. To the contrary! ... *Concrete appearances* are for *Marx* not only important because they are the starting point and means for knowledge of the "real movement", but they

[15] Many of the ideas here are elaborated upon in Geoffrey McCormack. "Rezension von *In and Out of Crisis*."In *Das Argument*, in review.

> themselves are what Marx wants to discover and understand in their connection at the end of the day.[16]

This dissertation belongs to the Classical Marxist methodological tradition. In other words, it rejects the toolbox approach and instead attempts to demonstrate how the "laws of motion" manifested themselves in Canada between 1974 and 2008. For, on the one hand, "as soon as the 'laws of development' come to be regarded as so abstract that they can no longer explain the actual process of concrete history," writes Mandel, "all that remains is a degenerate form of speculative socio-economic philosophy."[17] On the other hand, this rigid holding apart of "theory" and "history" and the denial of the historical relevance of the "laws of development" can just as easily lead to vulgar empiricism, in which empirical reality is in no way related back to the fundamental dynamics of capitalist development. This dissertation attempts to bridge these two extremes by moving from the abstract value categories developed by Marx to the concrete historical phenomena with which we are confronted, taking into account how the former are modulated – but not eliminated or made less important – by historically specific transformations of the capitalist system and historically contingent events. In short, it attempts to grasp "the essence, together with its mediations to the appearance" and hence the "unity of abstract and concrete elements."[18] Let us now turn to the chapter overview.

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[16] Henryk Grossman, *Aufsätze zur Krisentheorie* (Frankfurt: Verlag Neue Kritik, 1971): 45. Translation from the original German by Geoffrey McCormack.
[17] Ernest Mandel, *Late Capitalism* (New York: Verso, 1978): 20.
[18] Mandel, *Late Capitalism*, 21.

**Chapter Overview**

This dissertation argues that the long-run patterns of capital accumulation in Canada – including long periods of stability and instability – are fundamentally related to movements in profitability. Contrary to other Marxist approaches to long-run dynamics, however, the approach proposed in this work de-centers movements in the rate of profit in favour of shifts in the mass of profit and, in particular, how the latter are reflected in the fundamental driver of accumulation, namely, what Keynes called the "marginal efficiency of capital". Chapter 1 develops the theoretical framework for understanding the subject of this historical investigation; namely, the long period of economic instability between approximately 1974 and 1990, the economic crisis and depression of the early 1990s as well as the long period of sustained capital accumulation and relative stability from about 1993 to 2008. In addition to providing the theoretical framework for understanding long periods of stability and instability, it outlines the theory of "overaccumulation" or "failed valorization" as well as that of the short-run dynamics of the business cycle. The discussion in this chapter informs the subsequent analysis in chapters 2, 3, 4 and 5, wherein the theory is further concretized in historical analysis.

Chapter 2 examines the long period of economic instability in Canada from approximately 1974 to 1992. The analysis examines the long-run movements of the basic Marxist categories (rate of surplus-value, organic composition of capital, turnover time, mass of profit, etc.) and demonstrates how they manifest themselves concretely. Long-run instability is shown to be a function of how movements in the mass of profit translate into a long-run downward sloping marginal efficiency of capital. In addition to an

analysis of the Marxist categories, the bulk of the chapter consists of a detailed and unique historical account of the "Great Canadian Slump" of approximately 1990-92. Contrary to the conventional view, which sees the crisis as being a result of central bank interest rate policy, I argue that it was in fact – and fundamentally – a crisis of "overaccumulation" or "failed valorization" in the sense that Henryk Grossman used those terms. To make my case, I assembled a vast amount of empirical data, both quantitative and qualitative. The end result is a very concrete analysis of those tumultuous years of the late 1980s and early 1990s.

Chapter 3 picks up where the previous chapter left off. From 1993 to 2008 accumulation in Canada was smooth and stable. The dips of 1995, 2001 and 2003 were shallow and too short to be classified as recessions. In fact, many economists were optimistic that prudent economic policies and increasingly sophisticated financial systems had effectively smoothed out the business cycle.[19] I argue that the deep economic contraction of the early 1990s and subsequent economic stagnation set the stage for a renewal of capital accumulation and the long upturn of 1993-2008. As real wages and the price of machinery and equipment fell in the context of the recession, the re-organisation of production was made possible. Indeed, profound industrial restructuring alongside the cheapening of transportation, telecommunication and business-computing equipment helped to consolidate just-in-time production systems and the usage of information communication technologies in industrial processes. The results of these changes were increased profitability and lower overhead costs. In turn, these historical processes

[19]Timothy Lane, "The Changing Face of Risk in the Global Financial System," BIS Central Bankers' Speeches, 19 May 2011, http://www.bis.org/review/r110520c.pdf.

reversed the tendencies of decline: the rate and mass of profit began to grow, a high average marginal efficiency of capital was established, business investment picked up, real wages rose and a long period of sustained capital accumulation got underway.

Chapter 4 looks at the effects of recent transformations in the Canadian economy on the business cycle during the long period of stability examined in the preceding chapter. It argues that the consolidation of just-in-time production (JIT) and distribution systems, as well as information communication technologies (ICT) profoundly changed the character of inventory control and investment. In particular, owing to computerised JIT requisition and inventory management systems, businesses were content to hold lower levels of inventory. To be sure, JIT and ICT have contributed to stabilising the inventory investment environment by reducing both the level and therefore volume of investment required to meet the needs of production and distribution (this has manifested itself in lower inventory-to-shipment ratios), and an increasing ability to monitor, forecast and influence changes in demand. Hence, these new technologies and organisational forms resulted in fewer disruptions along the supply chain, which reduced fluctuations in inventory investment. Consequently, these transformations contributed to a smoothing out the inventory investment cycle and the overall pattern of economic growth in Canada.

Chapter 5 investigates the historical processes that undergirded the stability of Canada's banking sector during the global financial crisis of 2008-09. It argues that the historical processes outlined in chapters 3 and 4 underlay the stability of Canada's banking sector during the global financial crisis of 2008-09. The conventional view identifies Canada's sound banking system as the principal factor underlying economic

stability in this period. Contrary to this position, the chapter argues that the stability of the banks was in fact a function of a long phase of stable capital accumulation preceding the Great Recession (1993-2008). In other words, it contends that the strength of the Canadian economy during the financial turmoil of the late 2000s was not a function of the stability of its banking system; rather, the stability of the banks was a function of the strength of the economy over the preceding fifteen-year period. The chapteraccomplishes this by theoretically and empirically "re-embedding" the banks in the historical dynamics of capital accumulation in Canada. Hence, it underlines the important theoretical-empirical linkages between the stability of bank assets and the economic context in which they are situated. In particular, it demonstrates that a growing mass of profit in this period stabilized bank assets and kept the banks afloat during the worst of the financial crisis. This analysis stands in sharp contrast to other accounts of banking in the recent period, which fail to account for how the banks are embedded in the *dynamicprocesses* of capital accumulation.[20]

In the conclusion, the main threads of the dissertation are brought together, summarized and the politics implicit in the analysis is made explicit.

[20]See e.g. Mario Seccareccia. "Financialization and the Transformation of Commercial Banking in Canada." (Ottawa: University of Ottawa, 2010).

Capitalist history is always enacted upon a moving stage.[21]
– Anwar Shaikh

## Chapter 1: TheTheory of Long- and Short-run Dynamics

This chapter develops the theoretical framework for understanding the long-run patterns of economic development in Canada, including the long downturn (1974-1990), the subsequent slump (1990-1992) and the long upswing (1993-2008). It also offers a basis for comprehending the shorter economic cycles along these long curves. These patterns will be examined in great historical detail in the chapters to follow. The purpose of this chapter is to grasp theoretically the long- and short-run dynamics of capital accumulation in contemporary capitalism. In later chapters, we will see how these have been modified by recent transformations in the Canadian economy. As discussed in the methodological introduction to this work, we will proceed from the abstract to the concrete. In this case, this means moving from the long-run to the short-run dynamics of accumulation, followed by their relation and how each is modulated by the historically specific features of contemporary capitalism in future chapters.

There are many approaches to analysing periods of long-run stability and chronic instability in capitalism. The field of study has a long, rich history of debate from Hyde Clarke to Anwar Shaikh.[22] Whereas certain theories rely on social structures, world systems, the rise and fall of modes of regulation and regimes of accumulation or "up-and-down" movements in the rate of profit, this chapter draws on the work of Henryk

[21] Anwar M. Shaikh, "The First Great Depression of the 21st Century". In Leo Panitch, Greg Albo and VivekChibber (Eds.) *Socialist Register 2011*. (London: Merlin Press, 2010): 45.
[22] Hyde Clarke, "Physical Economy", *Railway Register*, 1847; Anwar M. Shaikh, "The First Great Depression of the 21st Century". In Leo Panitch, Greg Albo and VivekChibber (Eds.) *Socialist Register 2011*. (London: Merlin Press, 2010): 44-63.

Grossman and its subsequent development by Anwar Shaikh to explain long periods of stability and instability, but it does not strictly follow it.[23]

In brief, it argues that these long periods of stability and instability are caused by long-run movements in the aggregate mass of profit and, importantly, how these movements manifest themselves in changes in the marginal efficiency of capital (MEC, to be discussed below). This approach identifies three "moments" in the long-run dynamics of accumulation, governed by movements in the mass of profit and MEC. First, it highlights that both phases of stability and instability occur along the same "curve" of accumulation. The extremes of strong growth, on the one hand, and deep slump, on the other, represent opposite poles of a continuum. In the "early" phase of accumulation, wide-ranging stability prevails. In the "late" phase of accumulation, the capitalist mode of production is characterised by increasing instability. From this perspective, there is no sharp division between phases of instability and those of stability. Finally, the "late" phase of accumulation is punctuated by volatility and crisis once the mass of profit stops growing, or when the MEC = 0. This is the point of absolute overaccumulation. Here, stagnation can "sneak" into existence or can be ushered in suddenly by a violent crisis, depending on historical specificities. Absolute overaccumulation can cause instability for a number of years. The early 1990s slump in

[23] S. Bowles, D. Gordon & T. Weisskopf, *After the Wasteland: Democratic Economy for the Year 2000.* (Armonk: M. E. Sharpe, 1990); I. Wallerstein, *World-Systems Analysis: An Introduction.* (Durham: Duke University Press, 2004); M. Aglietta, *A Theory of Capitalist Regulation: The US Experience.* (New York: Verso, 1979); A. Lipietz, *Mirages and Miracles.*(London: Verso, 1987); Ernest Mandel, *Late Capitalism.* (New York: Verso, 1993); Henryk Grossman, *The Law of Accumulation and the Breakdown of the Capitalist System: Being also a theory of crises.* (London: Pluto Press, 1992); A. Shaikh, "The Falling Rate of Profit as the Cause of Long Waves: Theory and Empirical Evidence." In Kleinknecht, A., Mandel, E. &Wallerstein, I. (Eds.), *New Findings in Long Wave Research.*(London: Macmillan Press, 1992).

Canada is a case in point (we will explore this in Chapter 2). In the intervening period between the "early" phase and the point of absolute overaccumulation, the growth rate of the mass of profit and the MEC approach zero. As the growth rate declines, endogenous and exogenous shocks become increasingly disruptive, and crises become deeper and longer. In Chapter 2, we will see how the period between the mid-1970s and the crisis of absolute overaccumulation (1988-1992) was a period during which the growth rate of the mass of profit was slowing and the MEC was approaching zero, thereby causing increasing instability. The crisis of absolute overaccumulation of the early 1990s subsequently helped to usher in a long period of stability (the subject of Chapter 3).

This approach is at odds with theories of accumulation that treat movements in the rate of profit *on total investment* as the chief determinant of economic growth and stability. Long-run movements in the mass of profit – and more specifically, the MEC – demonstrate significantly different patterns of economic development from those that arise from the plethora of measures available for the rate of profit. To be sure, the rate of profit does not govern accumulation directly, despite the coincidence of their patterns empirically. Happenstance, after all, is not determination. Hence, when Andrew Kliman in his recent book *The Failure of Capitalist Production*points out that his new and improved measure for the rate of profit is strongly correlated with investment and therefore accumulation patterns, this is not surprising. The coincidence of the rate of profit and the rate of accumulation is related to how these are measured. The former is measured by profit over capital stock of the previous year. The latter is the rate of change in the capital stock. Given that capital stock grows owing to profit and that firms invest a

portion of this in the capital stock, it is hardly surprising that the growth of the capital stock should coincide with the rate of profit. The latter, after all, is an index of profit to capital stock. The rate of accumulation, on the other hand, is an index of the addition of new machinery, equipment, buildings and structures to the existing capital stock. Since the addition will always be a portion of total profits, one would expect a coincidence in patterns. However, this does not mean that there is a relationship of determination, no matter how strong the correlation. As we will see below, investment, and therefore accumulation, too, is a function of the marginal efficiency of capital (MEC), not the rate of profit directly.

Moreover, many theories that rely on the rate of profit have an unhelpful "stagnationist"bias when applied historically. Andrew Kliman and Murray Smith are good examples of this. In their respective work, they attempt to demonstrate a long-run decline in the rate of profit. They have found innovative ways to do this. For instance, Smith adds what he calls socially necessary unproductive labour (SNUL) to the numerator for the organic composition of capital and seeks to argue that increasing unproductive activities in the economy have contributed to the rising organic composition of capital.[24]Kliman, on the other hand, uses historical-cost capital stock (instead of the standard current-cost capital stock) to measure the denominator for the rate of profit. This produces a notably different trend in the latter.[25] In particular, whereas others see a recovery in the profit rate after 1982, Smith and Kliman see the continuation of a secular

[24] M. Smith, *Global Capitalism in Crisis: Karl Marx & the Decay of the Profit System.* (Black Point: Fernwood, 2010).
[25] A. Kliman, *The Failure of Capitalist Production: Underlying Causes of the Great Recession* (London: Pluto Press, 2012): 76.

decline. As a result, they see contemporary capitalism as inherently unstable and therefore look to external stimuli as the cause of growth in advanced capitalist countries.[26]For example, Murray Smith sees ballooning credit as the main impetus to growth in Canada in the 1990s.[27] Similarly, Kliman believes the U.S. economy has been more or less stagnating since the 1970s. For him, economic growth up until the Great Recession was being driven by a series bubbles, first in the stock market and later in the housing sector.[28]The error of these thinkers lies in relating the long run movements in the rate of profit to capitalist reproduction in a direct way. For instance, after demonstrating a secular decline in the rate of profit since the 1970s, Kliman attempts to relate this decline to the current global slump. He writes that "the most obvious explanation [for the Great Recession of 2007-09], and therefore the explanation that would seem most plausible, is that … the persistent fall in the rate of profit produced a persistent fall in the rate of capital accumulation and ... the fall in the rate of accumulation led in turn to"instability.[29] The most obvious explanation, however, is not always the most plausible. Certainly, before the Copernican Revolution, the geocentric astronomical model in natural sciences would have seemed the most obvious explanation for the movement of the heavenly bodies. This does not make it correct. Indeed, Grossman emphasized the fact that accumulation (though not the rate of accumulation) *accelerates* despite a falling rate of profit. This occurs "because the scope of accumulation expands not in proportion to the

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[26]Kliman, *The Failure of Capitalist Production*; R. Brenner, *The Boom and the Bubble: The US in the World Economy*. (New York: Verso, 2002).
[27] Smith, *Global Capitalism in Crisis*
[28]Kliman, *The Failure of Capitalist Production*
[29]Kliman, *The Failure of Capitalist Production*, 74.

level of profitability, but in proportion to the weight of the already accumulated capital."[30]

As will become increasingly clear from the analysis to follow, re-focusing our attention on the mass of profit and – more specifically – the MEC as the key determinant for stable reproduction precludes the stagnationist bias of thinkers like Smith and Kliman, especially with regard to empirical measurements of capitalist stability.From this perspective, one can have long-run stability despite a falling rate of profit. Unfortunately, as LefterisTsoulfidis points out, the "causal relationship between the rate profit and the mass of net profits ... is usually lost in the writings of many modern Marxist economists."[31] I will elaborate on this relationship in more detail below. The discussion of the relationship between the rate and mass of profit as well as the marginal efficiency of capital will form the basis of the theory of the long-run dynamics undergirding this dissertation.

Like theories of long-run stability and instability, business cycle theory, too, has a long history. To name but a few analytical approaches that have emerged in the economics profession, there is Hayek's theory of monetary overinvestment (resulting from an unstable supply of bank credit), Schumpeter's cyclical real growth approach (originating from surges of innovation), Friedman and Schwartz's theory of sequential monetary shocks (in which both consumption and investment react to monetary growth rates) and Minsky's disequilibrium theory of investment and financial instability (driven

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[30] Henryk Grossman. *The Law of Accumulation and the Breakdown of the Capitalist System: Being also a theory of crises.* (London: Pluto Press, 1992): 74.
[31] LefterisTsoulfidis, *Competing Schools of Economic Thought.* (New York: Springer, 2010): 119.

by profitability expectations and eventual financial fragility).[32] The latter theoretical framework was deployed by Kindleberger in his famous historical work on the subject.[33]

To explain the short-run dynamics of capital accumulation, this chapter deploys the theory of the business cycle developed by Anwar Shaikh.[34] In short, it argues that random endogenous shocks spur excess demand, increased profitability and hence augmented investment. Since, in this context, profits from the previous period are insufficient to meet current investment requirements, credit must fuel growing investment. It is the growth of the resulting debt burden that objectively limits the upswing. In other words, internal profitability drives the cycle up, and the resulting debt burden drags it down. We will examine this theory more closely below. The upshot is that the forces driving the business cycle are *different* from the long-run dynamics determining the MEC. Yet they intersect in important ways. We shall explore this intersection below.

The first section of this chapter reviews the theory of overaccumulation, or failed valorisation, as first advanced by Henryk Grossman and later developed by Anwar Shaikh. It examines the long-run dynamics of capital accumulation and contests the commonplace reading of Grossman that suggests his theory points to a "final collapse" of the capitalist system with no room for the role and effect of contending class forces. Furthermore, it enriches our understanding of this thinker by making available in English

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[32]Zarnowitz, Victor. "Recent Work on Business Cycles in Historical Perspective: A Review of Theories and Evidence." *Journal of Economic Literature* 23, no. 2 (June 1985): 523-80.

[33] C. P. Kindleberger.& R. Aliber. *Manias, Panics, and Crashes: A History of Financial Crises*. (Hoboken, New Jersey: John Wiley & Sons, Inc., 2005).

[34]A. Shaikh, "Accumulation, Finance, and Effective Demand in Marx, Keynes and Kalecki." In WilliSemmler (Ed.) *Financial Dynamics and Business Cycles: New Prospects*. (Armonk, New York: M.E. Sharpe, 1989).

important selections from his *magnum opus* and his private correspondence (especially his work on the relationship between the dynamics of accumulation and wage movements). This section highlights the need to circumvent (partially at least) the debate about the *rate of profit* as it concerns *crisis formation*, and to focus instead on the *growth rateof the mass of profit* and the *marginal efficiency of capital* (MEC) in the development of crises. Finally, it examines how crises of absolute overaccumulation unfold both chronologically and across sectors as well as how they *manifest* themselves as crises of disproportionality and overproduction. To be sure, this dissertation falls squarely in the overaccumulation school insofar as the latter provides the framework for understanding long periods of instability and crises fundamentally bound up with capital accumulation. It rejects the underconsumption, disproportionality and wage-push profit squeeze accounts of crisis insofar as they seek to provide a general theory of instability and crisis in this sense. The latter will not be dealt with in this thesis. For treatments of these schools, see Kliman, Sweezy, Brenner and Webber and Rigby.[35] Within the overaccumulation school, this dissertation most closely follows the work of Grossman. Anwar Shaikh, as the foremost contemporary theorist to build upon Grossman's work, also figures prominently in the dissertation. The second section of this chapter examines the theory of the business cycle developed by Anwar Shaikh and its relationship to the long-run tendencies of capitalist development. Future chapters will scrutinise how recent

[35] Andrew Kliman, *The Failure of Capitalist Production: The Underlying Causes of the Great Recession.* (Pluto Press, 2011), pp. 151-180; Paul M. Sweezy, *The Theory of Capitalist Development: Principles of Marxian Political Economy.* (New York: Monthly Review Press, 1970), pp. 156-162; Robert Brenner, *The Economics of Global Turbulence.* (New York: Verso, 2006), pp. 13-26; Michael J. Webber and David L. Rigby, *The Golden Age Illusion: Rethinking Postwar Capitalism.* (New York: The Guilford Press, 1996), pp. 154-58.

developments in technology, production and distribution have modulated the short- and long-run dynamics of capital accumulation. Let us now proceed to our examination of the basic theory informing this dissertation.

**Theory**

Capitalism is a contradictory and crisis-ridden system. To account for the oft-occurring expansions and contractions of the economy, mainstream economists developed business cycletheory. Many economists have studied the phenomenon of the business cycle, including Goodwin, Phillips, Kalecki and Samuelson, to name but a few. Within this discipline, the recessionary phase of the business cycle is defined as a longer or shorter interlude in which real Gross National Product (GNP) grows negatively.[36] However, the duration and depth of recessions vary. Indeed, economists make a distinction between the business cycle and the growth cycle. Whereas the business cycle involves both an expansion and a contraction, the growth cycle is characterised by fast followed by slow growth. In other words, the growth cycle does not involve a contractionary phase.[37] As we will see further below, the character of these cycles – whether "business" or "growth" – are internally related to both the long-run dynamics of accumulation as well as historically-specific characteristics of the particular period of capitalism in which they occur.

To avoid a mechanical reading of these cycles, when continental European economists study phases of accumulation and contraction they prefer to speak of

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[36] Paul A. Samuelson and William D. Nordhaus, *Economics,* 7th ed. (Boston: McGraw-Hill Irwin, 2001), 478, 761. The standard measure of a recession is two negative quarters of economic growth.

[37] "Growth Cycles."In *Glossary of Statistical Terms*. Organisation for Economic Co-operation and Development, 2007, p. 351.

*conjunctures*. Conjunctural analysis highlights the dynamic character of capitalist accumulation, and this often appears to be more amenable to the varying contours and features of the trade cycle. Some heterodox economists have taken this dynamism to mean that each economic contraction or slowdown is historically contingent. For instance, Panitch and Gindin write that "capitalist development is a contradictory process prone to crises, the genesis, nature and outcome of which are historically contingent."[38]Contrary to this view, I hope to demonstrate that capitalism admits of a dynamic regularity.To put it differently, there are cyclical movements built into the system, but these cycles exist alongside a powerful, immanent and recurrent tendency for capitalist social reproduction to breakdown altogether. This immanent tendency results in a sometimes descending, sometimes ascending "curve" of capitalist development (what I shall refer to below as the "late" and "early" phases of capital accumulation, respectively). Or, put differently, capitalism goes through long periods of instability and stability. These internal rhythms are then "modulated by conjunctural factors and specific historical events."[39] To be sure, from this perspective, capitalism has a "logic" that exists across periods. Analysis must demonstrate how this logic manifests itself in particular times and particular places. This does not mean, however, that there is no place for historical contingency or random events. It is the way these different processes relate that produces concrete historical outcomes.

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[38]Leo Panitch and Sam Gidnin, "Capitalist Crises and the Crisis this Time". In Leo Panitch, Greg Albo and VivekChibber (Eds.) *Socialist Register 2011*. (London: Merlin Press, 2010): 5.
[39]Anwar Shaikh, "The First Great Depression of the 21st Century", 44.

All economic crises in capitalism belong to the same *genus* insofar as each interrupts – or is an interruption of – the process of accumulation in some way.[40] The investment cycle is an oft-occurring *species* of crisis.[41] This cycle takes two forms readily acknowledged by mainstream economists; namely, the inventory investment cycle and the fixed investment cycle.[42] Fundamentally, these cycles arise from the turbulent, competitive and unplanned character of capitalism. Indeed, capitalism is characterized by constant mismatches between supply and demand.[43] A full account of these cycles will be provided in the second part of this chapter.

Despite the erratic, unplanned character of accumulation and the investment cycles that arise from it, capitalism has a remarkable ability to generate long periods of relative stability. In these periods, the economy goes through growth cycles or business cycles with short and shallow recessions.[44] I will discuss the theory behind these periods in the section that follows. For now, it is enough to note that capitalism in Canada developed on such an ascending curve from 1993 to 2008. This is the subject of Chapter 3. In order to understand how this long period of stability was possible, however, we must first examine another species of crisis inextricably woven into the very fabric of capitalist accumulation itself – the crisis of overaccumulation.[45]We shall see that this type

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[40]Leo Panitch and Sam Gindin. "Capitalist Crises and the Crisis this Time", 4; P. Mattick, *Marx and Keynes: The Limits of the Mixed Economy*. (London: Merlin Press, 1980): 75.
[41] David McNally, *Global Slump* (Oakland, CA: PM Press, 2011): 66.
[42] Jacob J. Van Duijn, *The Long Wave in Economic Life* (London: George Allen &Unwin Ltd., 1983): 8-15. Schumpeter called these the Kitchin and Juglar cycles, respectively, after the persons who discovered them.
[43] A full account of these cycles is beyond the scope of this chapter.
[44] Mandel observes, but does not theorizethis fact in *Late Capitalism*.
[45] Henryk Grossman uses the terms *overaccumulation* and *failed valorization* to denote the same process. Whereas the former emphasises that too much capital has been accumulated, the latter emphasises that not enough surplus-value has been produced *relative to constant capital* to continue accumulation at a given rate.

of crisis is intimately bound up with the long-run tendencies that make long periods of stability and instability possible. To this end, we turn to the foundational work of Henryk Grossman on the topic.

**Henryk Grossman**

Grossman's chief work has been interpreted in two ways. An advocate of the first and (until recently) most popular interpretation, Anton Pannekoek, believed that Grossman sought to demonstrate that capitalism would automatically and "for purely economic reasons" reach the point of final collapse.[46] Complementing this view, he suggested that Grossman dismissed "human intervention" in the process of social transformation.[47]

The second (admittedly less common and less dramatic) interpretation suggests that Grossman developed more of a "cyclical" model of capitalist development – one where crises recur – and that "human intervention" in both the movement of wages and political strife are important components of this process. Grossman's award-winning biographer, Rick Kuhn, writes that his "breakdown tendency takes the form of recurrent economic crises ... definitely not a unidirectional path to final collapse."[48] Moreover, in a letter to a colleague in the U.S., Grossman writes that "the idea is foreign to me that capitalism must collapse 'of itself' or 'automatically,' as Hilferding and other socialists ... argue against my book."[49]Furthermore, in his chief economic work he writes that "despite its objectively given necessity, breakdown is in great measure capable of being

[46] A. Pannekoek, "The Theory of the Collapse of Capitalism." *Captial& Class* 1, no. 1 (1977): 62.
[47]Pannekoek, "The Theory of the Collapse of Capitalism", 62.
[48] Rick Kuhn, "Economic crisis, Henryk Grossman and the Responsibility of Socialists", *Historical Materialism* 17 (2009): 7.
[49] Henryk Grossman. "Letter to Paul Mattick." June 21 1931 (Translated by G. McCormack)

influenced by the living forces of the struggling classes and allows a certain space for the active intervention of the classes."[50] It is this second, dynamic interpretation of Grossman's work that informs the theoretical discussion in this chapter.

In addition to the caricatures of Grossman as a "final collapse" theorist, there are a number of specific criticisms that have been made of his breakdown theory. In Anglophone academia, the principal critiques were made by Paul Sweezy in the early 1940s and Howard and King in the late 1980s.[51] It should be noted, however, that these criticisms began circulating well *before* the publication of the first abridged English translation of Grossman's *The Law of Accumulation and Breakdown of the Capitalist System* in 1992.[52] In other words, they began circulating before Grossman could to some extent "speak for himself" to English-speaking audiences. In what follows, I will address each of these criticisms in turn. I will show that they are based on invalid caricatures of Grossman's nuanced thought.

To begin, Sweezy suggests that Grossman's theory of breakdown is somehow *based upon* Bauer's reproduction scheme. Sweezy rightly suggests that "to take any particular, and necessarily arbitrary, scheme and assume that it faithfully represents the essentials of the real process of capital accumulation is to invite theoretical disaster."[53] Nevertheless, we need not take this criticism seriously. Grossman makes perfectly clear

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[50] Henryk Grossman, *Das Akkumulations- und Zusammenbruchsgesetz des kapitalistischen Systems.* (Frankfurt: Verlag Neue Kritik,1970): 601-2 (Selectiontranslatedby G. McCormack)

[51] Paul M. Sweezy, *The Theory of Capitalist Development: Principles of Marxian Political Economy.* (New York: Monthly Review Press, 1970) and M. C. Howard and J. E. King, "Henryk Grossman and the Breakdown of Capitalism."*Science & Society* 52, No. 3 (Fall 1988): 290-309.

[52] Henryk Grossmann, *The Law of Accumulation and Breakdown of the Capitalist System: Being Also a Theory of Crises.* Translated by JairusBanaji.(London: Pluto Press, 1992).

[53]Sweezy, *The Theory of Capitalist Development*, p. 211.

that he merely uses Bauer's reproduction scheme as a *foil* to demonstrate the breakdown tendency. In fact, he is critical of the empirical validity of Bauer's claims regarding, for example, the level of the organic composition of capital. Around 1930, he wrote that "Bauer's numerical example, with its unusually low organic composition is not a reflection of contemporary capitalism but expresses the low organic composition under capitalism in its early phases ... I demonstrated my proof under conditions dictated by O. Bauer."[54] In a letter to Paul Mattick in 1931, Grossman similarly and more explicitly tries to clear up the confusion regarding his usage of Bauer's scheme of reproduction:

> I did not want to give the impression that I derive the breakdown tendency from Bauer's scheme. Indeed, I emphasized in the book that Bauer's scheme is unrealistic. That position is a direct implication of my methodological piece on the 'Plan for Capital'; Bauer makes unrealistic, false assumptions and I just wanted to pursue his argument *ad absurdum* ... Bauer's scheme is insufficient on many grounds... I wanted to demonstrate that the result of even this, his mistaken scheme, is breakdown and not equilibrium. *I do not want, however, to identify myself with Bauer's scheme under any circumstances.*[55]

As is clear from Grossman's statements above, Sweezy's criticism of the latter on these grounds is fundamentally incorrect.

In addition to the above criticism, Sweezy argues that Grossman's theory of breakdown is internally inconsistent on the basis of his restrictive and unrealistic assumptions. I will reproduce his criticism here, despite its faulty assumption that Grossman's argument rests upon Bauer's reproduction scheme, because it highlights

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[54] Henryk Grossman, "Notes on Alfred Braunthal's review" (circa 1930). http://www.marxists.org/archive/grossman/1929/breakdown/braunthal.htm

[55] Henryk Grossman, "Grossman to Paul Mattick Sr, June 21st, 1931." http://www.marxists.org/archive/grossman/1931/0621.htm

problems in Sweezy's own thinking about the driver of technological change in capitalism:

> Under almost any circumstances, the assumption that constant capital grows twice as rapidly as variable capital seems highly unrealistic. But it is nothing short of fantastic when coupled with the assumption that the working force is growing at the enormous rate of 5 per cent per annum, for a rapid growth in the size of the working force is precisely the factor operating most strongly to keep down the ratio of constant to variable capital. *This is so because an abundant labor supply prevents wages from rising and hence holds in check the tendency to substitute machinery for labor power.* It follows that if we assume a very rapid growth in the labor supply it would only be reasonable to assume an increase in constant capital approximately equal to the increase in variable capital. On this hypothesis, the scheme can be expanded indefinitely ... we should have to conclude that capitalism can go on for ever.[56]

In the above passage, Sweezy again fails to grasp Grossman's theory of accumulation and betrays faulty assumptions of his own. The inducement to invest in labour-displacing technological innovation is the result of *pressure from wages* for Sweezy, linked to the rate of accumulation, which he posits as the independent variable. He writes that "the price of labor power tends to rise under the stimulus of accumulation ... and that this induces a continuous substitution of machines for labor power."[57] This vision of technological change is inconsistent with that of Marx. For the latter, it is the competitive process itself – i.e. the warlike rivalry between capitalists – that drives technological innovation, *not merely wage pressures.*[58] Technological innovation decreases unit costs relative to competitors while simultaneously increasing the

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[56]Sweezy, pp. 211-212. Emphasis added.
[57]Sweezy, p. 212.
[58]This misunderstanding undoubtedly stems from Sweezy's uncritical adoption of the neoclassical quantity theory of competition; i.e. that competition is a function of the size and power of firms relative to the market in which they are situated, instead of Marx's vision of strategic competition. See John Weeks, "The Fallacy of Competition: Markets and the Movement of Capital." In JameeMoudud, Cyrus Bina and Patrick L. Mason (Eds.), *Alternative Theories of Competition.* (New York: Routledge, 2013), p. 22.

magnitude of output. To put this into Marxist terms, capitalist competition reduces the individual labour-time required for the production of commodities. If the individual capitalist can produce his or her commodities below the socially-necessary average labour-time, he or she has more room to set a competitive markup *below* the socially-necessary average price of production and *above* his or her individual cost-price.[59] As a result, he or she can capture more market share than his or her rivals (this must be done in any case due to the increase of output and hence surplus-value spread over more commodities). Undoubtedly, this need not take place as a result of technological innovation. There can, for instance, be innovations in the organization of production alone. However, the latter two forms of innovation often go hand-in-hand. Workers can, of course, also be made to work harder and faster on a given technological and organizational level. Nevertheless, empirically, capitalist production is characterized by an increasing organic composition of capital – and this is what counts. Grossman admits as much when he wrote in response to a critic that movements in the organic composition of capital "cannot be abstractly, deductively decided and has to be decided through empirical observation. Experience, indeed the experience of more than one hundred years, teaches that the value of constant capital, thus also of the total capital, in relation to variable capital grows more quickly than variable."[60] Of course, this should *not* be taken to mean that Grossman is saying that the organic composition of capital will always be at a high level in the advancedstages of capitalist development. Indeed, here he is pointing

[59]Karl Marx, *Capital*, Vol. 1. (New York: Penguin, 1990): 433-5. In this volume, Marx has yet to introduce cost-price, but the basic mechanism can be translated into the language he adopts for these processes in the third volume of *Capital.*

[60] Grossman, "Notes on Helen Bauer's Review" (Circa 1930). http://www.marxists.org/archive/grossman/1929/breakdown/hbauer.htm

to the experience of the last hundred years in which the *rate of growth* of constant capital exceeds that of variable capital. This does not, however, speak to the *particular level* of the organic composition, which can vary according to historical circumstances (e.g. a lower composition of capital after a severe crisis in which capital-values are destroyed or even how changes in the value composition of capital eventually come to be reflected in the organic composition). In other words, Grossman is pointing to a *tendency*, not an invariant, unidirectional trend; i.e. one that works itself out through large swings that nevertheless observe regularity.

With the above in mind, Sweezy is wrong on both counts of his Grossman critique. First, inter-capitalist competition *in and of itself* is sufficient to drive technological innovation. Technological innovation is not *merely* driven by accumulation-driven wage pressures. As a result, it is possible to have a rising organic composition of capital. Second, despite what Bauer's scheme *says*, movements in the organic composition of capital have to be examined *empirically*. After all, in Grossman's formulation, the organic composition of capital is seen as a *variable* among many.[61]

Howard and King provide a number of challenges to Grossman's theory of breakdown as well. They hold that Grossman "failed completely to establish the necessity of capitalist breakdown."[62] As above with Sweezy, I will address each of their criticisms in turn (of which there are a quite a few). First, the authors note that "critic after critic objected that Otto Bauer's initial assumptions were too rigid realistically to model an

[61]Grossman, *The Law of Accumulation*, p. 98.
[62] Unless otherwise stated, the quotations that follow in this section come from M. C. Howard and J. E. King, "Henryk Grossman and the Breakdown of Capitalism." *Science & Society* 52, No. 3 (Fall 1988): 290-309.

actual capitalist economy." We have already dealt with this criticism above and will not pursue it further here.

Second, the authors suggest that – in the face of an increasing organic composition of capital –"capitalists would adapt their behavior to avoid ruination, slowing the overall pace of accumulation and reducing the rate of increase of the organic composition of capital." Here we need only point out again that actual movements in the organic composition of capital must be gleaned empirically.

Third, Howard and King suggest that "if the rate of exploitation is allowed to rise" there is nothing in Grossman's analysis to suggest that it would not offset the tendency to breakdown. We will see why this criticism is incorrect below in our treatment of the dynamics of accumulation. In short, it can be shown that even if the rate of exploitation rises faster than the organic composition of capital, the rate of profit will still fall. We will return to this below.

Fourth, the authors suggest that Grossman "treats the effects of technical change in cheapening the elements of both constant and variable capital as subsidiary factors which merely supply a 'correction' to the underlying forces leading to economic breakdown. But these effects are an inherent part of the process of capital accumulation." In other words, the authors criticize him for not including the factors that might lead to the cheapening of the constant capital component of the organic composition of capital, which would thereby contribute to capitalist stability. To be sure, they criticize him for not taking into consideration movements in the value composition of capital. This criticism is unwarranted on methodological grounds. Grossman is here dealing with the

*organic composition of capital*. Elsewhere, he notes the important distinction between the value composition of capital, the technical composition and the organic composition.[63] Hence, he is aware of the ongoing process of the cheapening of the means of production. Indeed, in the section of his book on modifying countertendencies, he writes that "devaluation necessarily flows out of the mechanism of capital even in its ideal or normal course. It is a necessary consequence of continual improvements in technology, of the fact that labour time is the measure of exchange value ... *It follows that the assumption of constant values has a purely provisional character.*"[64] In other words, his model should be considered at a particular level of an analysis –i.e. from the standpoint of the organic composition of capital, *not the value composition of capital*. In any case, keeping in mind that the organic composition of capital is historically variable for Grossman, this problem resolves itself again at the empirical level. What were the actual movements of the organic composition of capital?

Fifth, the authors argue that Grossman "should have explained why individual capitalists cease to invest at a point where the rate of profit is still healthily positive." Here the authors clearly miss Grossman's main theoretical point; i.e. that a fall in the rate of profit is insufficient grounds for crisis. Rather, a stagnating or shrinking mass of profit is for him the underlying cause of crises of overaccumulation or failed valorization. We will return to this point in great detail later, as this important distinction forms the theoretical kernel of this entire dissertation. We need not pursue the point further here.

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[63]Grossman, *The Law of Accumulation and Breakdown of the Capitalist System*, pp. 79-80.
[64]Grossman, *The Law*, p. 156, emphasis added

Sixth, other criticisms by Howard and King include the fact that Grossman "glosses over the distinction between the different departments of the economy" and that he "assumes all commodities to sell at their labor values ... yet it is by no means self-evident that this would leave his analysis unimpaired."Regarding the second point, it is not at all clear that the transformation of values into prices of production wouldin fact undermine the theory. The criticism remains undeveloped in their article and I shall not speculate here on what they were attempting to get at. On the first point, I would suggest that this treatment is unfair. Grossman raises department issues at several points throughout the book. For instance, he remarks that Rosa Luxemburg had misunderstood "the significance of Marx's methodological procedure. For who could ensure that accumulation takes place proportionally in the two departments? No such regulator exists under capitalism or can exist ... As a rule the actual process of accumulation is quite unequal in the various branches."[65]Although his mathematical model does not deal with the problem of the departments and is concerned to show the point of breakdown, the implications of this breakdown for the departments areperfectly compatible with the model at a lower level of analysis. Paul Mattick makes this point in his book *Marx and Keynes*, where the breakdown tendency leads to a realization crisis and a crisis of disproportionality of sorts:

> Because *not enough*[surplus-value] has been produced, capital cannot expand at a rate which would allow for the full realization of *what has been* produced. The relative scarcity of surplus-labor in the production process appears as an absolute abundance of commodities in the circulation process and as the overproduction of capital.[66]

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[65]Grossman, *The Law*, p. 119.
[66]Paul Mattick, *Marx & Keynes: The Limits of the Mixed Economy*. (London: Merlin Press, 1980), p. 79.

We shall return to this problem in more detail below. It is sufficient here to point out that the departments figure centrally in the analysis, especially – but not exclusively – at a lower level of analysis. Why not exclusively? At the most basic level, the departments are presupposed in the very dual character of the commodity as a use-value and an exchange-value.

Seventh, the authors suggest that Grossman "paid no attention to the underconsumptionist and disproportionality strands in Marx's theory of crisis." This is not a fair assessment of Grossman either. Much of *The Law of Accumulation and Breakdown* was dedicated to *combating* the theory of underconsumption, and Grossman himself wrote his own tract on disproportionality crises in a separate work.[67] The same holds true for the criticism levelled against Grossman that he "misunderstood the Marxian notion of 'absolute over-production of capital,' which occurs when the reserve army of the unemployed has fallen to zero, so that further accumulation adds nothing to the production of surplus value." Grossman was clearly providing an *alternative explanation* using the same textual material. The criticism is invalid.

Eighth, the authors argue that the rate of profit "must increase" if the cheapening of the means of production and consumer goods is taken into consideration. This, of course, is to consider the analysis from the standpoint of the value composition of capital, not the organic composition of capital. This distinction is important. Indeed, empirically there are clearly periods where the *organic composition of capital* rises and the rate of

[67]Henryk Grossman, "The Theory of Economic Crises" (1922), http://www.marxists.org/archive/grossman/1922/crises/index.htm

profit falls. Grossman was certainly sensitive to these dynamics, as I have already shown above.

Ninth, Howard and King suggest that Grossman "assumes that there is no difficulty in realizing all the surplus value that is produced." In particular, they suggest that loan capital is "set aside" and not "offset" by any investment. "Effective demand will therefore be insufficient to realize the total surplus value." Hence, they argue, Grossman is a "prisoner of Say's Law." This criticism is unwarranted on methodological grounds: he does not set out to analyze the credit system in detail. It figures into his analysis, but in a secondary way. Nevertheless, Grossman is implicitly critiquing Say's Law when he suggests that there is too little surplus value to purchase what has been produced in additional fixed and circulating capital, even after it is mediated by the credit system. As overaccumulation sets in, he writes, "the scale of production reaches a level where there is not enough surplus value to valorise the accumulated capital. The accumulation fund ... shows a deficit ... which is initially covered by borrowings. This in turn reduces the total mass of available loan capital ... until ... the loan is completely exhausted." Finally, the crisis begins "because there is not enough surplus value to continue accumulation, even after borrowings."[68] Hence, Say's Law is broken – on a very fundamental level the proposition cannot be maintained – and Howard and King's criticism is shown to be invalid. We will examine this more closely below.

Above we have seen that the existing criticisms of Grossman do not hold water. This concludes the section on the critiques of Grossman. Let us now turn to our

[68]Grossman, *The Law*, p. 114.

discussion of accumulation and overaccumulation, the theoretical foundation for understanding long periods of stability and instability in capitalism.

**Accumulation and overaccumulation**

Capitalism is beset with a fundamental contradiction. On the one hand, capitalist stability is premised upon growth; on the other, growth itself is a source of instability. *Capitalist accumulation itself begets crisis.* Henryk Grossman calls this kind of disruption in the process of capital accumulation a crisis of overaccumulation or failed valorisation (*das Versagen der Verwertung*). Understanding this species of crisis is necessary to understanding long periods of capitalist stability and instability. In what follows, I explain the dynamics underlying this form of crisis with the help of Henryk Grossman's chief work, *The Law of Accumulation and Breakdown of the Capitalist System: Being Also a Theory of Crisis* (1929).

**Fundamentals**

Let us begin with the fundamentals. Marx notes that labour is "a condition of human existence which is independent of all forms of society."[69] Nevertheless, the specific form it takes in each particular historical epoch varies. In the capitalist epoch, the process of production has a dual character.[70] Marx saw this dual character as "crucial to an understanding of political economy."[71] The dual character of capitalist production entails both a process for the production of commodities and "a valorisation process for obtaining profit." This duality of capitalist production informs the entire edifice of

[69] Karl Marx. *Capital*, Volume I. (New York: Penguin Books, 1990): 133
[70] Grossman. *The Law of Accumulation*, 61.
[71] Marx, *Capital*, Volume 1, 132

Marx's *Capital*. This is clear in his reproduction schema, for instance, where the distinct use-values arising from the sectors responsible for means of production and means of consumption are taken to be central to capitalist reproduction. Indeed, as Grossman writes, the reproduction scheme(and therefore the dual character of labour and the commodities capitalism produces) "*underlies the whole analysis of the first volume as well as the other volumes of Marx's principal work* (and not merely the chapter on reproduction in the second volume)."[72] Nevertheless, despite the dual character of capitalist production, its essential driving force is the profit motive. Indeed, "the entrepreneur will only continue production and extend it further if it enables him to enlarge his profits."[73]To be sure, capitalist production produces both use-value and value. Yet it is the latter – in the form of profit – that drives the system forward. We return to this fundamental point below.

Competition in capitalism is a "turbulent and inherently violent process" that is a lot like war. Market share is the "territory" and technical change is the "arms race."[74] In competition, businesses are compelled to seek out ways to secure market share from their competitors. The primary means of competition is the cheapening of commodities. For this reason, capitalists are forced to find ways to cut costs. To this end, they must invest a portion of their profit into research and development, new technologies, the expansion of production and so on. The upshot is that capitalists must accumulate capital to stay competitive. Capitalist production, therefore, "should never be depicted as something

[72] Henryk Grossman. "The Change in Marx's Original Plan for Capital and Its Causes."Translated by Geoffrey McCormack.In Rick Kuhn (Ed.) *Economic Studies of Henryk Grossman.* (Leiden: Brill, 2014), emphasis added.
[73]Grossman, *The Law of Accumulation*, 61.
[74]Tsoulfidis, *Competing Schools*, 112.

that it is not, i.e. as production whose immediate purpose is consumption ... This would be to ignore completely its specific character."[75] To be sure, the production of profit, and the transformation of a portion of this back into capital, i.e. accumulation, "is the immediate purpose and the determining motive of capitalist production."[76]That is to say, profit is both the motive for production and the source of accumulation. Moreover, as I will show below, the stability of the capitalist system as a whole depends upon accumulation. Without profit, however, this accumulation would be impossible.

Here it is worth pausing for a moment to highlight the important linkage described above; i.e. that between competition and accumulation. The theory of competition informing this work profoundly – fundamentally – differs from the notion of"perfect competition" found in neoclassical textbooks as well as that of "imperfect competition" informing Post-Keynesian and some Marxist work (e.g. the Monthly Review School). In the neoclassical camp, the quantity theory of competition prevails. From this perspective, competition is understood to be a function of the number of firms competing and the size of the market for their homogenous commodity. Firms have perfect information and there are no entry or exit barriers within and between industries. As such, the degree of competition depends upon the number of firms competing relative to the size of the market. In this model, firms do not have pricing power; i.e. firms are price takers. Importantly, however, this vision of "perfect competition" cannot be made consistent with "endogenous technological progress involving fixed investment."[77]This is

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[75] Marx, *Capital*, Volume. 3 (New York: Penguin Books, 1993): 351-2
[76] Marx, *Capital*, Volume. 3, 351-2
[77] J. K. Moudud, "The hidden history of competition and its implications." In J. K. Moudud, Cyrus Bina and Patrick L. Mason (Eds.).*Alternative Theories of Competition* (New York: Routledge): 47.

for two reasons: first, because firms are miniscule price takers, they have no incentive to grow their market shares; and second, "monopoly profits are needed to induce firms to invest in new knowledge."[78]Hence, the linkage between competition and innovative accumulation in the classical tradition informing this work is inconsistent with the neoclassical tradition of perfect competition (a theoretical situation in which no monopoly profits exist). Importantly, it is also inconsistent with Post-Keynesian and Neo-Marxist ideas of "imperfect competition", for technological innovation itself tends to break down barriers to entry. The result is that monopoly prices cannot be sustained.[79] Therefore, any model seeking to link "imperfect competition" to endogenous technological innovation is internally inconsistent. The vision of what JameeMoudud calls "strategic competition" informs the entirety of this dissertation.[80] In this vision of competition, all firms are aggressive price-setters. Moudud concisely summarises strategic competition as follows:

> Firms set their prices on the basis of strategic considerations arising from the threat of actual and potential rivals. Because ongoing innovation and technological change are persistent features of the capitalist economy, entry barriers are generally porous over any longer-run time period. Thus prices are set as *competitive mark-ups* (as opposed to monopoly ones) as firms attempt to target the minimum-cost range of their average total costs. The porosity of entry barriers and the fact that market prices in any industry are regulated by the cost structures of the most efficient firms are core features ... that relate directly to the classical theory of competition.[81]

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[78] J.K. Moudud, "Introduction." In J. K. Moudud, Cyrus Bina and Patrick L. Mason (Eds.).*Alternative Theories of Competition* (New York: Routledge): 2.
[79]Moudud, "The hidden history", 45-47.
[80] J. K. Moudud, *Strategic Competition, Dynamics, and the Role of the State* (Northampton: Edward Elgar, 2010).
[81]Moudud, "Introduction", 6.

Competing firms gain profit at the expense of their rivals, but this only explains differential accumulation. It does not explain absolute accumulation and the absolute growth of profits. For Grossman, as for Marx, the source of profit is unpaid labour-time. Simply put, workers add more value to output than the value of their wages and salaries. They spend more time working for capital than they do for themselves. For example, suppose the average working day is eight hours long. Now suppose it takes an average of four hours for the worker to produce enough value to purchase the bundle of commodities required for his or her reproduction. The worker receives this value in the form of a day's wage. This means the worker has in fact worked four hours for him- or herself and four hours "for free" for the capitalists. The value created by the worker above and beyond what is paid out in wages is called *surplus-value*, an aliquot part of which is profit. Living labour is the sole source of surplus-value, and all forms of idle income derive from it (e.g. profit, interest and rent).[82]

We can calculate the rate of surplus-value for any given point in time by the formula $s/v$. In this formula, $s$ stands for surplus-value and $v$ stands for the wages and salaries paid out to production workers (i.e. *variable capital*).[83] The rate of surplus-value tends to rise in capitalism. This is because capitalists find cheaper ways to produce commodities over time through labour-saving technologies.[84] These cheaper commodities are then consumed by workers. In this way, variable capital is reduced relativeto surplus-value. In other words, capitalism tends to reduce the value of the

[82] Also included in surplus-value are non-production activities.
[83] Production workers produce surplus-value, whereas non-production workers do not.
[84]Gerard Duménil and Dominique Lévy, "The Classical Marxian Evolutionary Model of Technical Change."In Mark Setterfeld (Ed.).*Handbook of Alternative Theories of Economic Growth, Forthcoming.* (Aldershot: Edward Elgar, 2009).

bundle of commodities that workers consume. It takes less labour-time today to produce this bundle of commodities than it did, say, twenty years ago. For example, in 1991 a high-end laptop computer with a 12 MHz processor, 1MB memory and a built-in 20MB hard drive would cost approximately $3000.00. Today, for a mere $300.00, one can purchase a machine with over 10,000 times more storage capacity and over two-hundred times more processing power. The tendency to cheapen commodities applies to most goods workers consume. As the elements of consumption require less and less labour-time to produce, the quantity of labour-time dedicated to the production of surplus-value increases. Surplus-value tends to rise relative to variable capital.[85] This is called *relative surplus-value.* Additionally, the rate of surplus-value can also be increased by forcing workers to expend more labour-time in any given day.[86] This is called *absolute surplus-value*.

Because technological innovation in capitalism has a labour-saving bias, capital accumulation depends more and more on machinery and equipment. In other words, capitalist production displays "a tendency to replace human labour with machines."[87] Machinery, equipment and raw materials constitute *constant capital.* As capitalists invest in labour-saving technologies, the ratio of constant capital to variable capital tends to rise. The value of machinery and raw materials tends to rise relative to the value of total wages paid to production workers. To put it differently, the machinery behind the elbow of each

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[85] Anwar Shaikh, "The Falling Rate of Profit as the Cause of Long Waves: Theory and Empirical Evidence," in *New Findings in Long Wave Research*, eds. Alfred Kleinknecht, Ernest Mandel and Immanuel Wallerstein (London: Macmillan Press, 1992): 177.

[86] For example, blackberries and e-mail allow businesses to squeeze more surplus-value from workers even after the official working-day is over.

[87] James W. Rinehart, *The Tyranny of Work* (Toronto: Nelson, 2006): 154.

worker tends to increase over time because investment in the latest machinery tends to make individual capitalist firms more competitive. For instance, one bulldozer operator can do the work of a dozen manual labourers in a fraction of the time. To take another example, in the logging industry in Canada, between 1995 and 2005, the number of workers employed in the sector declined by 44 percent, yet output increased by 10 percent in the same period.[88] The introduction of labour-saving technologies and new forms of organisation undoubtedly made this situation possible. For instance, John Deere's "walking tree harvester" (developed in 1994) was the first of its kind. The six-legged walking machine hews trees, strips them of their branches and cuts them into manageable pieces. It can do the work of several lumberjacks in a fraction of the time.[89]The upshot is that as capitalism develops the magnitude of machinery behind the elbow of each worker grows. The ratio of the value of machinery, equipment and raw materials to the value produced by living labour is called the *organic composition of capital* and can be expressed in the formula *C/l*.[90] The technical composition of capital tends to rise over time due to investment in labour-saving technologies, and this is "followed suit" by the organic composition of capital.[91]

Before proceeding, we must examine one more variable in the production of surplus-value. The capitalist system can yield more surplus-value in any given year by decreasing the *turnover time* of capital. Turnover time constitutes the production time

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[88] CANSIM Table 379-0023 and 281-0024

[89]SAE International. "A Deere walks into a forest ..." http://www.sae.org/mags/sohe/11118

[90] Marx makes the distinction between the technical, value and organic compositions of capital. For our purposes, the key determinant is the organic composition of capital. For a short summary of the distinction, see Ben Fine and Alfredo Saad-Filho, *Marx's Capital*, Fourth Edition (London: Pluto Press, 2004), 102-108.

[91]Tsoulfidis, *Competing Schools*, 117.

and circulation time for any given commodity. All capitalists are compelled to decrease their individual turnover time. The faster they produce and sell their commodities, the greater the share of total surplus-value they secure from their rivals. This results in a *socially necessary turnover time* that all capitalists are required to meet or beat on pain of extinction.[92] Yet, if the yearly socially necessary turnover time can be reduced, then aggregate surplus-value can be increased for the system as a whole for that year. Simply put, the reduction of turnover time means workers produce more surplus-value in any given year while the quantity of unproductive labour-time is reduced relative to output. Marx notes that

> a reduction in turnover time or in one of its two component sections, production time and circulation time, raises the mass of surplus-value produced. But since the rate of profit simply expresses the ratio of the mass of surplus-value produced to the total capital engaged in producing it, it is evident that any reduction of this kind raises the rate of profit as well.[93]

**The law of the tendential fall in the rate of profit**

We can now combine the rate of surplus-value ($s/v$), the organic composition of capital ($C/l$) and turnover time ($t$) into the formula for the "annual" rate of profit ($r$).[94]Each of these components is essential to understanding crises of overaccumulation.

$$r = \left(\frac{s/v}{1 + C/l}\right) \div t$$

The above formula demonstrates that profitability depends upon the rate of surplus value, the organic composition of capital and turnover time. First, all things being equal,

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[92] David Harvey, *The Limits to Capital* (New York: Verso, 2008): 186.

[93] Marx, *Capital*, Volume 3, 163. It is important here to note that the costs of circulation are viewed by Marx as deductions from surplus-value.

[94] This measure of the annual rate of profit considers surplus-value before it is distributed in the forms of profit, interest, rent and wages of non-production workers.

the rate of profit will rise if the rate of surplus value rises. The reverse occurs if the rate of surplus value falls. Second, if the composition of capital or the turnover time rise, the profit rate will fall. The reverse occurs if these ratios fall. A growing organic composition means that the number of workers available to produce surplus-value shrinks relative to constant capital. A rising organic composition of capital causes the rate of profit to fall because it undermines the source of profit, i.e. the surplus-value produced by workers. Basu and Manolakos have demonstrated mathematically that the long-term trend in the rate of profit is determined by the growth of the composition of capital. "The most striking aspect of this argument," they note, "is that it does not depend on the behaviour of the rate of surplus value." Indeed, no matter how the latter behaves over time, as long as the composition of capital grows, "the rate of profit will have a long-term negative trend."[95] To be sure, even if the rate of surplus-value rises faster than the organic composition, the latter will still cause the average rate of profit to fall. This is because the source of surplus-value, living labour, grows slower than constant capital. This, too, applies to the effect of turnover time. Turnover time is circulation time plus production time. If this is decreased, it will have no bearing on the organic composition of capital. It simply leads to higher profitability in a given time period, all things being equal. In fact, decreasing turnover time may accelerate the replacement of older fixed capital vintages, thereby facilitating further labour-saving innovations and a falling rate of profit. As we have seen above, all capitalists are compelled to invest in labour-saving technologies to

[95]DeepankarBasu and Panayiotis T. Manolakos. "Is There a Tendency for the Rate of Profit to Fall? Econometric Evidence from the U.S. Economy, 1948-207." *Economics Department Working Paper Series* (Amherst: University of Massachusetts Amherst, 2010). See also Tsoulfidis, *Competing Schools*.

cheapen their commodities. If they cheapen their commodities first, they can take market share away from their competitors and procure a larger share of total surplus-value. As labour-saving technologies generalise across the economy, all capitalists invest more in machinery and equipment than in labour power. The source of surplus-value gets smaller relative to total investment, despite turnover time. Therefore, though the accumulation of capital may improve profitability for any individual capitalist in the short run, it tends to undermine profitability for capitalists as a whole in the long run. Marx calls this the law of the tendential fall in the rate of profit. This law is central to the theory of overaccumulation.

**The rate of profit, mass of profit and the crisis of overaccumulation**

As I noted above, nothing in capitalism will be produced unless it can be produced at a profit. This should highlight the fact that the falling rate of profit in and of itself is not a sufficient condition for crisis. After all, businesses strive to earn *profit,* not necessarily a particular *rate of profit level.* This fact has been pointed out by the Austrian economist, Murray N. Rothbard:

> Even if the profit rate falls, why should businessmen stop investing, especially all of a sudden? What is the mechanism to explain the sudden, sharp upper turning point? Moreover, even if the profit rate falls, the admittedly increasing mass of saved capital might well increase the absolute amount of aggregate profits, so that even though the rate falls, the process may still stimulate a great deal of further investment.[96]

[96]Murray N. Rothbard, *Classical Economics: An Austrian Perspective on the History of Economic Thought Volume II* (Aldershot: Edward Elgar, 1995): 431.

Unbeknownst to Rothbard, Marx recognized these problems in his treatment of crisis.[97] The answers have been repeated time and again by succeeding classical political economists, such as Henryk Grossman, Paul Mattick and Anwar Shaikh. In 1929, Grossman wrote:

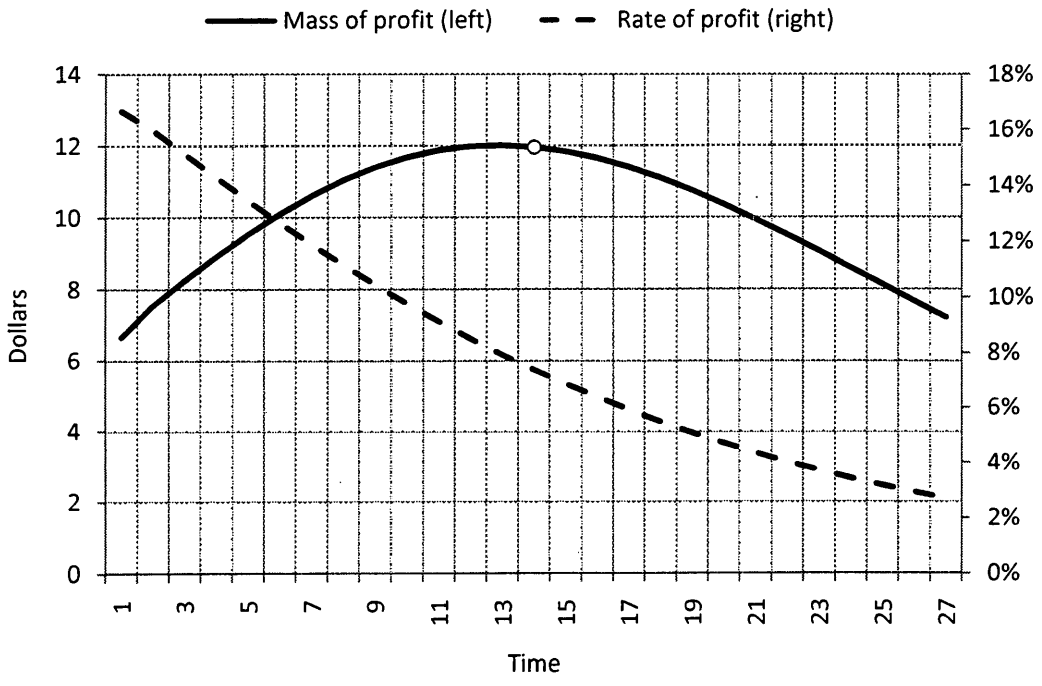
> "Rate of profit" and "mass of profit"have entirely different meanings for theory, despite the close connection between them. Several writers ... could not demonstrate the necessary breakdown of capitalism because they confined their attention to the fall in the rate of profit. Breakdown cannot be derived from this. How could a percentage, a pure number such as the rate of profit produce the breakdown of a real system? ... An explanation is only possible when we relate the breakdown not to the rate of profit, but to its mass.[98]

In short, accumulation will continue until the mass of profit begins to stagnate. As the rate of profit falls, the mass of profit continues to expand. As long as enough profit is being produced, accumulation can continue. It is, after all, profit that is reinvested in additional machinery and equipment, not the rate of profit. To put it differently, accumulation depends upon a growing mass of profit. Once the mass of profit begins to stagnate or shrink, however, the rate of return on the marginal unit of capital – i.e. on the latest investments – turns zero or negative. To be sure, at the point of absolute overaccumulation, the *magnitude* of returns does not increase, despite the addition of new capital. At that point, capitalists stop investing in new machinery and equipment. As Mattick points out in his book *Marx and Keynes*, in this situation "the existing capital is simultaneously too small and too large: it is too large in relation to the existing surplus-value and it is not large enough to overcome the dearth of surplus-

[97] Marx, *Capital*,Volume 3, 349-375.
[98]Grossman, *The Law of Accumulation,* 102-3.

value."[99] There is too much constant capital relative to surplus-value. A crisis of overaccumulation means that there is not enough surplus-value in the system to keep accumulation going at a given rate.[100]

**Figure 1. Rate and mass of profit**




The graph above is an abstract representation of the movements of the rate and mass of profit.[101] Note that the mass of profit continues to expand despite a falling rate of profit. The marker on the curve for the mass of profit indicates the point of absolute

[99] Paul Mattick, *Marx and Keynes: The Limits of the Mixed Economy* (London: Merlin Press, 1969): 68.
[100] As Henryk Grossman puts it: "This not because too much surplus value has been produced but because in relation to the accumulated mass of capital too little surplus value is available." See Henryk Grossman, *The Law of Accumulation*, 79.
[101] Henceforth, I will refer to the mass of surplus-value as the mass of profit. The reader should understand the latter as the mass of surplus-value in its undistributed form (i.e. not yet in the differentiated forms of profit, interest, rent, etc.).

overaccumulation.[102] At this point, the mass of profit begins to stagnate and investment in new machinery and equipment necessarily grinds to a halt because additional investment in capital does not result in additional profit. In the third volume of *Capital*, Marx describes the situation as follows:

> As soon as capital has grown in such proportion to the working population that neither the absolute labour-time that this working population supplies nor its relative surplus labour-time can be extended ... where, therefore, the expanded capital produces only the same mass of surplus-value as before, there will be an absolute overproduction of capital; i.e. the expanded $C + \Delta C$ will not produce any more profit, or will even produce less profit, than the capital $C$ did before its increase by $\Delta C$.[103]

The causal relationship between the rate and mass of profit, as well as the precisepoint of overaccumulation, can be understood in the following way. In "normal" accumulation, the marginal unit of capital ($\Delta C$) procures an additional sum of profit ($\Delta s$). At first glance, what we describe here appears similar to what Keynes called the marginal efficiency of capital (MEC). However, the theoretical framework deployed by Keynes is very different from our own. For this reason, it should be made clear that we use the MEC concept with certain caveats.

Keynes coined the "Marginal Efficiency of Capital" in Chapter 11 of *The General Theory of Employment, Interest and Money* (1936). He incorrectly attributes the idea to Fisher. It was in fact quite original.[104] In any case, Keynes defined the MEC as "the relation between the prospective yield of a capital-asset and its supply price or

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[102] This model is not intended to be an exact representation of reality. The exact timing of the crisis of overaccumulation is subject to changes in the rate of surplus-value, the organic composition of capital and the turnover time of capital.
[103] Marx, *Capital*, Volume 3, 360.
[104] Tsoulfidis, *Competing Schools*, 254.

replacement cost, *i.e.* the relation between the prospective yield of *one more unit* of that type of capital and the cost of producing that unit."[105] To be sure,

> the marginal efficiency of capital is here defined in terms of the *expectation* of yield and of the *current* supply price of the capital-asset. It depends on the rate of return expected to be obtainable on money if it were invested in a *newly* produced asset; not on the historical result of what an investment has yielded on its original cost if we look back on its record after its life is over.[106]

Keynes argued that to induce new investment, the MEC must exceed the rate of interest.[107] Otherwise, investors will engage in passive rather than active investment. In other words, the driver of accumulation is the MEC minus the interest rate. As long as the difference between the MEC and the interest rate is positive, active investment will occur. If this condition is not met, investment will stop. Indeed, "the succession of Boom and Slump can be described and analysed in terms of the fluctuations of the marginal efficiency of capital relatively to the rate of interest."[108]This idea is incredibly useful and is an important component of the theory to follow.

Despite its importance to Keynesian economics, however, the MEC has fallen into disuse in recent times. A cursory glance at the pages of the *Journal of Post Keynesian Economics* suffices to make the point: The MEC has been mentioned in 77 articles since 1979. It was cited in 45 articles in the 1980s, 21 in the 1990sand 11 in the 2000s. Between 2006 and 2012 – at a time when the concept would find its greatest

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[105] J. M. Keynes, *The General Theory of Employment, Interest, and Money* (New York: Harvest, 1964): 135, emphasis added.
[106] Keynes, *The General Theory*, 136.
[107] Keynes, *The General Theory*, 140-41.
[108]Keynes, *The General Theory*, 144.

pertinence, as we will see in the penultimate chapter of this dissertation – it was not mentioned at all.

Shaikh equates the MEC in Keynes with the rate of profit, and the MEC minus the interest rate with Marx's rate of profit of enterprise. He identifies the latter as the driver of active investment. He writes,

> The interest rate is the benchmark, the safe alternative, to the rate of return on active investment. Marx argues that it is the difference between the two rates, which he calls the rate of profit-of-enterprise ($r$ – i), that drives active investment. Keynes says much the same thing: he calls the profit rate the marginal efficiency of capital (MEC), and focuses on the difference between it and the interest rate as the foundation for viability of investment.[109]

There are two problems here. First, the rate of profit of enterprise is supposed to be a benchmark for two *alternative investment options* for capitalists. If the interest rate exceeds the rate of profit, capitalists will choose the safer, passive investment. The problem with this view is that the rate of profit represents returns on *total investments;* i.e. returns on *sunk capital.* Capitalists will not shut down production altogether if the interest rate rises above the rate of profit on total investment. Hence, this does not really measure the choice between two *alternatives* (i.e. either active or passive investment). To understand the real alternative, the MEC (minus the interest rate) must be deployed. This is related to the second problem: Marx's rate of profit of enterprise and Keynes' MEC (minus the interest rate) measure *different phenomena.* The former measures profits on *total* investment minus the interest rate. The latter measures the rate of return on the *latest* investments (minus the interest rate). It is *here* that an alternative exists for the capitalists: To invest in *additional* equipment (active) or to lend the funds (passive)? The

[109]Shaikh, "The First Great Depression of the 21st Century", 46-47.

MEC minus the interest rate therefore is a better measure for the real driver of capital accumulation, not the rate of profit of enterprise.

The MEC was implicitly recognized by Grossman. Indeed, from his standpoint, the long and numerous debates about the proper measure for the rate of profit as well as the rate of profit of enterprise are of secondary importance with regard to crisis formation. Kliman argues that the rate of profit on historical-cost capital stock is the relevant driver of accumulation, whereas Shaikh argues for the rate of profit of enterprise on current-cost capital stock. It is beyond the scope and purpose of this section to address these debates in detail. Nevertheless, for Grossman, neither the rate of return on historical-cost capital stock nor the rate of return on current-cost capital stock is precise enough to explain accumulation and breakdown in capitalism. As we have seen above, Grossman points out that investment will continue until the mass of profit begins to stagnate or shrink. At that point, the rate of return on the latest investments turns zero or negative. To repeat, the rate of return on the marginal unit of capital – i.e. *the latest investments, not the historical or replacement cost of the total current capital stock* – is central to the dynamics of accumulation and breakdown. From this perspective, there is an affinity between Keynes and Grossman. The MEC does not measure the rate of return on current-cost capital stock. Instead, it measures *new profits* over *newly added* capital stock at any point in time. In this sense, the MEC is intimately bound up with the process of accumulation itself. From this perspective, it is the returns on *new additions* to the capital stock that are most relevant.

Grossman's implicit usage of the MEC is central to the analysis made in this dissertation. Hence, we must here take a moment to point out the important difference between Keynes and Grossman on this question in terms of the determinants of the MEC, even if the Grossman never wrote explicitly about the MEC itself. First, for Keynes the MEC is a function of demand and supply. Increased investment will cause the MEC to fall "partly because the prospective yield will fall as the supply ... is increased, and partly because ... pressure on facilities for producing that type of capital will cause its supply price to increase."[110] For Grossman, on the other hand, the MEC is internally related to the dual character of labourin capitalist production; i.e. to Marx's labour theory of value and the tendency for the rate of profit to fall, as we have seen above. The same dynamics that lead to a falling rate of profit and, eventually, a stagnating mass of profit are internally related to the long-run determinants of the MEC.

There is a second important difference between Keynes and Grossman. In Keynes, the MEC represents an *expectation* for returns on an additional unit of current-cost capital stock. In Grossman, on the other hand, it is a *fait accompli*. In other words, it represents for him the *actual* return on the last unit of investment. This approach allows us to focus our attention on the *objective* limits to accumulation, rather than to have to rely on the subjective whims of expectation as in Keynes.

To sum up, for Keynes the MEC was the expectation of yield on one additional unit of capital. For him, the supply price of capital is determined by supply and demand. If demand for capital increases, its supply price will rise and the MEC will fall, all else

[110]Keynes, *The General Theory,* 136.

being equal. Likewise, the prospective yield will fall if as the supply is increased. Hence, for Keynes the MEC is determined by movements in supply and demand. For us, on the other hand, the MEC is internally related to the labour theory of value and the mechanisms that cause the rate of profit to fall in the classical Marxist tradition. As the rate of profit falls and the growth rate of the mass of profit begins to slope downwards, the returns on the latest investments begin to shrink. This is reflected in a downward sloping MEC. Finally, for Keynes the MEC is an expectation. For us, it is objectively determined by the law of value. Thus, it occurs independently of Keynes' animal spirits.

In this work, therefore, the MEC can be expressed algebraically as follows. Where $\Delta P_t/\Delta C_{t-1} + \Delta W_{t-1}$ equals the change in profits from time*t-1* to time*t* over the change in capital stock from time*t-2*to time*t-1* and the change in wage payments from time*t-2*to time*t-1*,

$$MEC = \left(\frac{P_t - P_{t-1}}{(C_{t-1} - C_{t-2}) + (W_{t-1} - W_{t-2})}\right) = \frac{\Delta P_t}{\Delta C_{t-1} + \Delta W_{t-1}}$$

In other words, this measure of the MEC is the profits made "this year" over the new investments (new additions to capital stock and the labour force) made "last year".

The precise point of overaccumulation is achieved when the MEC reaches zero. According to Tsoulfidis, this occurs when "the percentage change in capital stock (ΔC/C) [and, I would add, to be consistent with Grossman, additional wages (ΔW/W) – GM] is equal to the percentage change in the rate of profit (Δr/r) in the opposite direction." At that point, "any profits from new investment are offset by the cost of that investment,

thereby holding the mass of profit stagnant."[111]It is important to emphasise that this is a long-run process. The MEC can turn zero or negative due to contingent shocks to profitability. The kind of deep slump that is hard to get out of, however, is a result of the long-run movement towards a zero MEC. The table below demonstrates this process numerically.

**Table 1. Numerical demonstration of accumulation leading to a stagnating mass of profit**

| t | C + W | r | P | ΔC+ΔW/C+W | Δr/r | MEC |
|---|---|---|---|---|---|---|
| 1 | 116.67 | 15.99% | 18.65 | 16.67% | -4.08% | 11.90% |
| 2 | 135.32 | 15.12% | 20.46 | 15.99% | -5.40% | 9.72% |
| 3 | 155.78 | 14.28% | 22.24 | 15.12% | -5.58% | 8.70% |
| 4 | 178.02 | 13.46% | 23.96 | 14.28% | -5.75% | 7.71% |
| 5 | 201.98 | 12.66% | 25.58 | 13.46% | -5.91% | 6.75% |
| 6 | 227.56 | 11.89% | 27.07 | 12.66% | -6.07% | 5.83% |
| 7 | 254.62 | 11.15% | 28.40 | 11.89% | -6.21% | 4.94% |
| 8 | 283.03 | 10.45% | 29.57 | 11.15% | -6.35% | 4.09% |
| 9 | 312.59 | 9.77% | 30.54 | 10.45% | -6.48% | 3.29% |
| 10 | 343.13 | 9.12% | 31.31 | 9.77% | -6.60% | 2.52% |
| 11 | 374.44 | 8.51% | 31.87 | 9.12% | -6.72% | 1.79% |
| 12 | 406.31 | 7.93% | 32.22 | 8.51% | -6.83% | 1.10% |
| 13 | 438.53 | 7.38% | 32.37 | 7.93% | -6.93% | 0.45% |
| **14** | **470.89** | **6.86%** | **32.31** | **7.38%** | **-7.02%** | **-0.16%** |
| 15 | 503.21 | 6.37% | 32.08 | 6.86% | -7.11% | -0.73% |

In the above example, at *t1* the capitalist has invested $116.67 at a 15.99% rate of profit. The return on that investment is therefore $18.65. At *t2*, assuming a turnover time of one year and a re-investment rate of one-hundred percent, the capitalist re-invests his capital and profits from the previous year, which amounts to $135.32 ($116.67 + $18.65 = $135.32). Assuming a rising organic composition of capital, the rate of profit falls in the intervening period (in this case, by 0.87 percentage points). Therefore, the sum of capital ($135.32) is multiplied by a lower rate of profit (15.99%), giving us a return of

[111]Tsoulfidis, *Competing Schools,* 120.

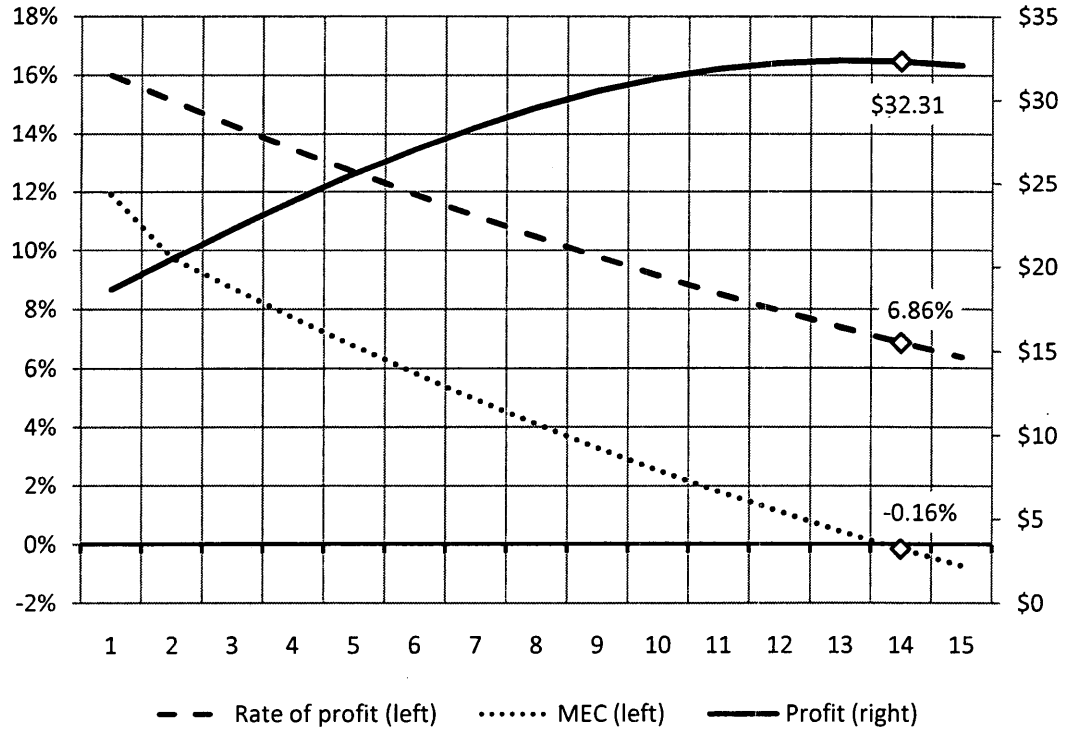
$20.46. The mass of profit has grown from $18.65 to $20.46, despite a falling rate of profit. Nevertheless, as the table above makes apparent, the MEC has begun to grow negatively. In this case, it fell by 2.18 percentage points. We shall return to this point below in dealing with causes of long periods of stability and instability. The table above demonstrates how the process of declining profitability alongside a growing mass of profit continues until *t14*. At this point, $\Delta C/C$ = 7.38% and $\Delta r/r$ = -7.02%. Each has changed by approximately 7%, but in opposite directions. According to the theory, the mass of profit will stagnate if the percentage change in capital stock is equal to the percentage change in the rate of profit in the opposite direction. This is our theoretical watershed; i.e. the line dividing the phase of accumulation from that of absolute overaccumulation. At that point, both the mass of profit growth rate and the MEC turn negative."Breakdown" occurs between *t14* and *t15* when investment in new fixed capital grinds to a halt. Henceforth, the mass of profit stagnates and "the *persistent* lack of new investment and the rising unemployment rate form the two characteristic phenomena of depression."[112]

The relationship in the table above is represented graphically below. Here it is important to note that at *t14*, while the rate of profit is 6.86%, the MEC is -0.16%. To be sure, despite a positive rate of return on *total* investments, the rate of return on the *latest* investments is negative. From this it is clear to see that not the rate of profit, but the *marginal efficiency of capital* – as we have defined it above –drives capital accumulation. What sense would it make to add new capital equipment and workers if the returns would

[112]Tsoulfidis, *Competing Schools*, 120, emphasis added.

be negative? In other words, the rate of profit can be positive, but if the MEC is zero or negative, *no new investments will occur.* To be clear, despite continued returns on *total investment*, investment in *new machinery and equipment* grinds to a halt because those new units of capital will not produce a return. Hence, the mass of profit and the MEC are crucial to understanding crises of overaccumulation – *not merely movements in the rate of profit.*

**Figure 2. Rate of profit, mass of profit and the MEC**




So far we have examined our general framework for analysis, including the roles of the falling rate of profit and the stagnating mass of profit in *crisis formation*, in particular. The movement of the MEC is central to business investment and therefore capital accumulation. As we will see below, this ratio – not the rate of profit in and of

itself – drives long periods of stability and instability. First, however, the next section will examine the relationship between wage movements and overaccumulation, before examining how absolute overaccumulation (MEC $\leq$ 0) unfolds temporally and across sectors. After these two issues have been addressed, we will examine the central importance of the MEC in determining long phases of stability and instability.

**Wage movements and overaccumulation**

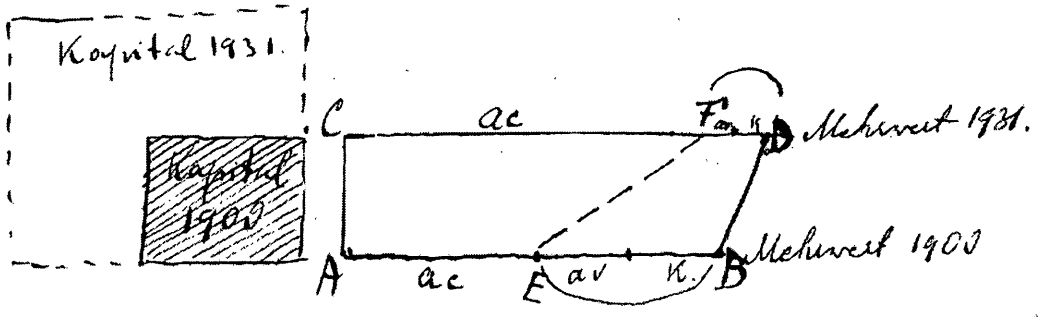
At this point in the analysis it is useful to examine the role of the class struggle and its relation to overaccumulation. First, there is a tendency in capitalism for real wages to rise. As we shall see, this is not inconsistent with the tendency towards the growing "immiseration" of the working population. In the course of capital accumulation, the organic composition of capital tends to rise alongside a rising productivity of labour. The result is the perpetual cheapening of commodities and therefore rising real wages, as we have seen above in our discussion of relative surplus-value. The tendency for real wages to rise is a temporary phenomenon. In other words, it belongs only to the initial – or "early" – phase of capital accumulation. At the advanced – or "late" – phase of accumulation (and once overaccumulation sets in) a crossroads is reached in the movement of wages. From this point on, capital accumulation can only continue if wages fall. According to Grossman, this is the correct foundation for interpreting the general law of capitalist accumulation. He writes that "immiseration ... can and must be ... the result of the late phase of capital accumulation."[113] In this context, an increasing rate of exploitation resulting from a reduction of real wages could act as a temporary "safety

[113] Grossman, *Das Akkumulations-*, 598.

valve" for the capitalist system. Nevertheless, the working class could push back against this downward pressure on wages. It might be possible, for instance, to win wage increases. In this way, the objectively determined law of breakdown does not contradict class struggle. Instead, despite its objectively given necessity, breakdown is subject to the living struggle of the classes and allows for their active intervention.[114] Here Grossman is clearly implying that, in the context of overaccumulation, rising wages can act to trigger crises.

To clarify Grossman's position further, I reproduce here my translation of a selection of his letter to Paul Mattick (dated June 21 1931). In this letter, Grossman demonstrates the intensification of the class struggle that accompanies a period of overaccumulation diagrammatically. In his hand-drawn diagram below, *"Kapital"* and *"Mehrwert"* can be translated as "capital" and "surplus-value", respectively.

**Figure 3.Overaccumulation and class struggle**




Grossman writes,

> The magnitude of capital *1900* (small square) grew until the year 1931, together with the organic composition. Surplus-value, too, in the year *1900* (line A-B) *grew* to the magnitude C-D. However, in order for the organic composition to rise in the accumulated capital as well, *a relatively increasing*

[114] Grossman, *Das Akkumulations-*, 595-603.

> *portion of the mass of surplus-value must be used for the purposes of accumulation.* Therefore, the *consumable* portion of surplus-value, the part intended for additional workers (av) and for the consumption of the capitalists themselves (k) becomes ever smaller, absolutely and relatively. In 1900 it amounts to the magnitude E-B, in 1931 only F-D. If the workers receive the previous portion av, then not enough remains for the capitalists. If the latter want to secure their portion k, then not enough remains for the workers. An *objectively revolutionary* situation arises: the system reveals that it can no longer secure the living conditions of the population. The *class struggle* becomes intensified from and *through* this *objective* situation; i.e. the *subjective* factor – that the working class is capable of overthrowing the system by means of class struggle – only enters the objective situation in this phase of development. Of course, the idea is foreign to me that capitalism must collapse "of itself" or "automatically," as Hilferding and other socialists (Braunthai) argue against my book.[115]

The intensification of the class struggle that accompanies a phase of overaccumulation is a result of the objectively-given long-run dynamics of accumulation. But it does not follow that the *outcome* of this struggle is pre-given by these same objective conditions. To the contrary, one can clearly infer from the foregoing analysis that the outcome of the class struggle in the context of overaccumulation is subject to questions of organisation, capacities and leadership.

To sum up, we have so far examined the theoretical linkages between the falling rate of profit, stagnating mass of profit, the marginal efficiency of capital (MEC), class struggle and crisis. In the next section, we explore how the crisis of absolute overaccumulation unfolds across time and sectors, before drawing out some of the threads implicit in the argument above and extending them to an analysis of long periods of stability and instability in capitalism in the subsequent section.

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[115]Grossman, "Letter to Mattick". It is important to note that Grossman's graph diagram abstracts from value disturbances in the organic composition of capital caused by movements in the value composition of capital. In reality, the process is much more complex; but his representation is sufficient for his purposes here.

**Accumulation and capitalist reproduction**

What is the relationship between capital accumulation and instability? In other words, why does an interruption of capital accumulation create economic volatility? The short answer runs as follows: Under capitalism, it would be impossible for workers to consume the total output of industry. As we have seen, workers produce more than the value of their wages. After its production, this surplus-value is distributed in the forms of profit, interest, rent, etc. But more surplus-value is produced by the great majority of working people than could possibly be consumed personally by the minority of capitalists, bankers and landlords taken together. For this reason, capitalism produces a permanent imbalance between production and consumption. If this were the end of the story, capitalism would be in a permanent state of crisis. However, we know that capitalism produces long periods of stability. Luxemburg and Malthus looked for external sources of demand to create stability in the forms of colonial markets and the aristocracy, respectively. In our framework, the source of this stability is capital accumulation. In other words, "equilibrium" between production and consumption is maintained by accumulating capital. What cannot be consumed by capitalists, landlords and bankers is consumed in accumulation. Above we saw how accumulation is a source of instability; we now see how it is also a source of stability.[116]Periods of stability are *characterised* by a strong rate of accumulation; periods of volatility are *characterised* by a weak rate of accumulation. We will discuss in greater detail periods of stability and

[116] Mattick, *Marx and Keynes*, 55-56.

instability in the next section. For now, let us examine in detail how sufficient demand can be generated *internally* for stable capitalist reproduction to occur.

This section makes the case that stable capitalist reproduction requires stable accumulation. So long as capital accumulation is taking place, it is possible for stable reproduction to occur. In other words, workers and capitalists in each sector of the economy will have sufficient means to purchase the consumer goods produced and capitalists will have sufficient means to purchase the produced means of production. An interruption in accumulation interrupts capitalist reproduction. In what follows, we will examine why this is so. After exploring the conditions that must be met for proportional capitalist reproduction to occur, we will examine how the crisis of overaccumulation acts to interrupt proportional reproduction. This is important, because it allows us to understand how an interruption in accumulation resulting from a zero or negative MEC unfolds across sectors of the economy.

Drawing on Marx's *Capital*, David Harvey in his *Limits to Capital* demonstrates the conditions that must be met for proportional capitalist reproduction to occur. These are summarized in part in the table below.

**Figure 4. Proportional reproduction**

| **Department 1** (means of production) | Balanced exchange | **Department 2** (consumption goods) |
|---|---|---|
| **Output** $(W_1)$: | | **Output**$(W_2)$: |
| $C_1 + \Delta C_1$ | ⟸ | $V_1 + \Delta V_1 + S_{01}$ |
| $C_2 + \Delta C_2$ | ⟹ | $V_2 + \Delta V_2 + S_{02}$ |

$$C_2 + \Delta C_2 = V_1 + \Delta V_1 + S_{01}$$

Department 1 produces means of production for both itself and Department 2, including replacement equipment and raw materials as well as additional means of production (represented by $\Delta C$). Hence, the output of Department 1 can be represented algebraically as follows:

$$W_1 = C_1 + \Delta C_1 + C_2 + \Delta C_2$$

Department 2 produces consumergoods. Its output is composed of the commodities purchased by the original labouring class in each department (V), those purchased by additional labour-power ($\Delta$V) and those luxury and non-luxury items consumed by the non-producing class and its hangers-on (S). Hence, the output for Department 2 can be expressed as follows:

$$W_2 = V_1 + \Delta V_1 + S_{01} + V_2 + \Delta V_2 + S_{02}$$

In balanced exchange, Department 1 consumes $C_1 + \Delta C_1$ and sends $C_2 + \Delta C_2$ to Department 2, while the latter consumes$V_2 + \Delta V_2 + S_{02}$ and sends $V_1 + \Delta V_1 + S_{01}$ to Department 1.Therefore, proportional exchange between departments must be:

$$C_2 + \Delta C_2 = V_1 + \Delta V_1 + S_{01}$$

To be sure, the value produced in Department 1 and sent to Department 2 must be equal to the value produced in Department 2 destined for Department 1. It must satisfy equivalence in exchange as well as the particular use-values required by each department. If this proportionality is not maintained, a crisis of disproportionality will ensue.[117] Therefore, the following question must be posed: What conditions must be met for proportional expanded reproduction?

[117] D. Harvey, *The Limits to Capital* (New York: Verso, 2006): 168.

In a nutshell, Harvey demonstrates that in order for expanded reproduction to occur, stableand proportional capital accumulation must be maintained. Relatedly, it is interesting to note that, in this model, more surplus-value must be dedicated to the production of capital equipment than to the production of consumer goods. In other words, the weight of accumulation in Department 1 is greater than that in Department 2. In any case, the upshot is that accumulation must remain proportional. Let us examine how he reaches this conclusion.

Harvey draws on Marx's numerical example to make his case. In his example, Department 1 is composed of the following parts: $4000C + 1000V + 1000S = 6000 = W_1$. Put differently,

$$\frac{C}{V} = \frac{4000}{1000}\frac{S}{V} = \frac{1000}{1000}r = \frac{1000}{5000}$$

In other words, the value composition of capital is 4:1, the rate of exploitation is one hundred percent and the rate of profit is twenty percent. On the other hand, the composition of Department 2 is $1500C + 750V + 750S = 3000 = W_2$. Again, expressed differently,

$$\frac{C}{V} = \frac{1500}{750}\frac{S}{V} = \frac{750}{750}r = \frac{750}{2250}$$

In other words, the value composition of capital in Department 2 is 2:1, the rate of exploitation is one hundred percent and the rate of profit is thirty-three percent. Therefore, in order for the system to remain balanced, expanded reproduction – accumulation – *must* occur in the following way. Of the $1000S$ produced in Department 1, 400 must be invested to expand constant capital, 100 to expand labour-power and 500

for the consumption of the capitalist class. In Department 2, $750S$ must be divided as follows: 100 for new constant capital, 50 for new variable capital and 600 for capitalist consumption. Hence,

Department 1 $4000C + 400\Delta C + 1000V + 100\Delta V + 500S_{01} = 6000 = W_1$

Department 2 $1500C + 100\Delta C + 750V + 50\Delta V + 600S_{02} = 3000 = W_2$

That is, for smooth and proportional growth to occur, the departments must have *different* rates of reinvestment:

**Table 2. Rates of reinvestment**

| | | |
|---|---|---|
| **Department 1** | $\frac{400\Delta C + 100\Delta V}{1000S}$ | **50%** |
| **Department 2** | $\frac{100\Delta C + 50\Delta V}{750S}$ | **20%** |

At these rates of reinvestment, the value composition of capital (VCC) in each department grows proportionately. Hence, the output, too, from each department will remain proportional:

**Table 3. Old and new value compositions of capital**[118]

| | **Department 1** | **Department 2** |
|---|---|---|
| **Old VCC** | $\frac{4000}{1000}$ | $\frac{1500}{750}$ |
| **New VCC** | $\frac{4400}{1100}$ | $\frac{1600}{800}$ |

Therefore, where $a$ is the rate of reinvestment and $k$ is the value composition of capital, for expanded reproduction to occur smoothly,

[118] These tables abstract from changes in the VCC except those governed by a rising TCC.

$$\frac{a_2}{a_1} = \frac{1 + k_2}{1 + k_1}$$

According to Harvey, this means"that the relative rates of reinvestment must reflect differences in value compositions in the two departments." The upshot of all of this is that "the two sector accumulation model Marx builds appears to show that, under the right conditions, including correct reinvestment strategies on the part of capitalists, accumulation can continue relatively trouble-free for ever."[119]

For Marx, capitalist reproduction – the equalization of supply and demand – would always only occur in an approximate sense. In other words, given the anarchic character of capitalist production, the system would be characterised by persistent over- and under-shooting. Moreover, if households choose to hoard their money, there would be insufficient demand. Hence, capitalist reproduction in Marx is hardly akin to the world of Say and Ricardo, where supply always creates its own demand. But it is also fundamentally different from the underconsumptionist ideas of Malthus and Luxemburg.[120]

We have seen, then, that capital accumulation in Department 1 must occur proportionally to capital accumulation in Department 2 in order for proportional reproduction to occur. But we have already seen, on the basis of the fundamental dynamics relating to the MEC, that an interruption of capital accumulation will occur once the MEC is equal to zero or negative. As such, the crisis of resulting from a zero or negative MEC must manifest itself simultaneously as a crisis of disproportionality. The

[119]Harvey, *Limits*, 169.
[120]Moudud, *Strategic Competition*, 64

interruption of capital accumulation that a zero or negative MEC brings leads to an imbalance in reinvestment in the two branches of production.

More explicitly, negative returns on the marginal unit of capital mean that it is no longer profitable for entrepreneurs to invest in new machinery and equipment. The result is a decline in the demand for new capital equipment. For this reason, the crisis of absolute overaccumulation first manifests itself as a *crisis of overproduction* in the economic sphere responsible for the production of capital equipment, which Marx calls Department 1. This is therefore simultaneously a *crisis of disproportionality*. Paul Mattick relates this process well in his book *Marx and Keynes*:

> Thus, the actual glut on the commodity market must be caused by the fact that labor is not productive enough to satisfy the profit needs of capital accumulation. Because *not enough* has been produced, capital cannot expand at a rate which would allow for the full realization of *what has been* produced. The relative scarcity of surplus-labor in the production process appears as an absolute abundance of commodities in the circulation process and as the overproduction of capital.[121]

Falling demand for capital goods causes a reduction in investment in Department 1, the consequence of which is the release of labourers in this department. The knock-on effect for Department 2, responsible for the production of means of consumption, is declining profitability, itself a result of the reduction in demand for consumer goods due to the decreased purchasing power of the labouring population. The crisis of overproduction in Department 1 spreads to those sectors responsible for the provision of consumer goods and services and manifests itself as a *crisis of underconsumption.* Effective demand declines relative to the quantity of consumer commodities available for purchase; i.e. the

[121]Mattick, *Marx and Keynes*, 79.

labouring population increasingly lacks the means to purchase output from Department 2. Prices and profits fall in both sectors. In response to declining profits, Department 2 reduces investment, sets labourers free and the downward spiral of declining consumption and production continues.

**The "early" and "late" phases of accumulation**

The point of absolute overaccumulation discussed above must be distinguished from the "early" and "late" phases of accumulation leading up to that point. The growth rate of the mass of profit is essential to understanding the phases preceding the crisis of absolute overaccumulation. For it is the growth rate of the mass of profit that determines, in part, the MEC. I argue that the MEC level is the foundation for long periods of stability and instability.[122]

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[122] As I have already noted above, this is different from other Marxist accounts of long periods of stability and instability in capitalism. Mandel, for instance, adheres to a semi-endogenous theory of long waves that is a function of movements in the rate of profit. The destruction of constant capital and the improvement in the rate of surplus-value caused by exogenous factors like WWII improve profitability for a time, but the endogenous process of capital accumulation itself (resulting in a rising organic composition of capital) eventually causes the rate of profit to fall. For Mandel, long waves of stability and instability are caused by up and down movements in the rate of profit. See Ernest Mandel, *Late Capitalism*. (New York: Verso, 1993), Chapter 4. I do not consider this approach to be adequate, for – as I have already shown above – the driver of accumulation is the marginal efficiency of capital, not the rate of profit directly. The former is a function of movements in the mass of profit. This approach is similar to the approach pioneered by Grossman, drawing on Marx, and further developed by Shaikh. See Henryk Grossman. *The Law of Accumulation and the Breakdown of the Capitalist System: Being also a theory of crises.*(London: Pluto Press, 1992). I do, however, think Shaikh is inconsistent in his *Socialist Register* 2011 piece, wherein he refers to the rate of profit of enterprise (the rate of profit minus the interest rate) as the driver of accumulation, as we have already seen above. See Anwar Shaikh, "The First Great Depression of the 21st Century". In Leo Panitch, Greg Albo and VivekChibber (Eds.) *Socialist Register 2011*. (London: Merlin Press, 2010): 44-63. Moreover, Mandel's approach is also inadequate empirically, for the rate of profit fell throughout the post-war period, but owing to a growing mass of profit (and a positive MEC), relative stability prevailed. See Anwar Shaikh, "The Falling Rate of Profit as the Cause of Long Waves: Theory and Empirical Evidence." In Alfred Kleinknecht, Ernest Mandel, and Immanuel Wallerstein (Eds.) *New Findings in Long Wave Research* (London: Macmillan Press, 1992), p. 185. This, incidentally, is also Robert Brenner's major empirical weakness in his *The Economics of Global Turbulence* (New York: Verso, 2006), wherein he sees the introduction of Japan and Germany into the global market for manufacturing goods – and hence over-competition – as the principal force driving down profits in the 1970s. In fact, the rate of profit in the U.S. began falling around 1946. It was not until the mass of profit

The theory propounded in this chapter must be differentiated from conventional theories of the relationship between accumulation and the rate of profit. Accumulation is nota function of the rate of profit, as e.g. Kliman suggests. Instead, as Grossman rightly points out, accumulation "is only a function of ... the magnitude of profit."[123] This highlights the need to deemphasise the rate of profit in our analyses of *crisis formation* (it still remains relevant for e.g. interest rate determination, as we shall see in Chapter 2) and emphasise the growth rate of the mass of profit – and more specifically, movements in the MEC as the key driver of capitalist stability or instability. The confusion arises because, more often than not, the denominators for the rate of accumulation and the rate of profit are identical. Additionally, the magnitude of dollars invested will always be a portion of the mass of profit. Therefore, it is always likely that there will be a strong *correlation* between the rate of profit and the rate of accumulation. Nevertheless, correlation is not determination.

It is the growth rate of the mass of profit that governs the accumulation in capitalism, for – if we provisionally abstract from the dynamics of credit – the growth rate of the mass of profit objectively determines the outer limit of accumulation and is the incentive to further investment. In other words, one cannot "invest" the rate of profit, and this is why the *mass of profit* is the key. As we have seen above, the mass of profit is the source of investment. If the growth rate of the mass of profit is positive, then accumulation, too, will be positive because the means for investment are present.

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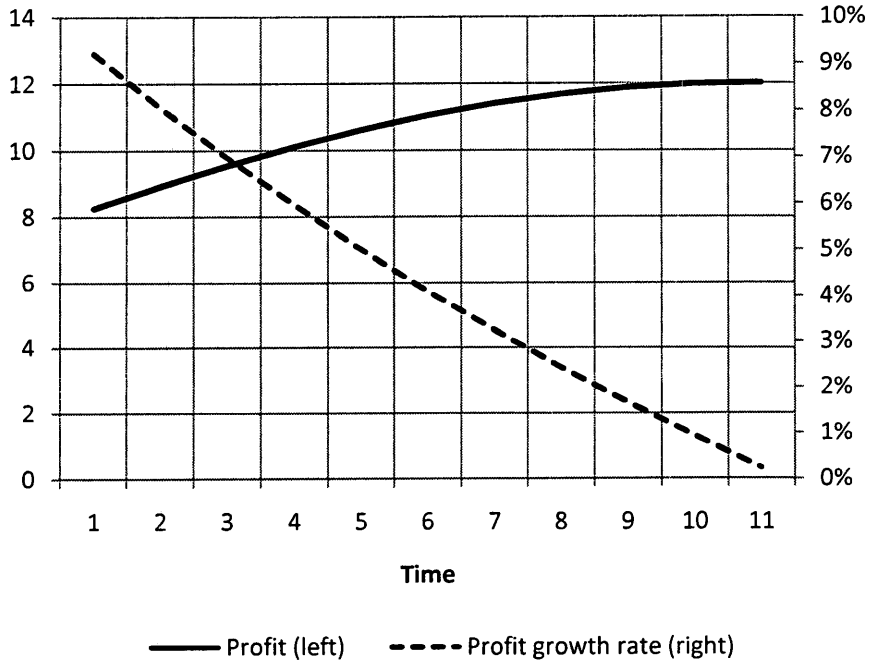
began to stagnate in the 1970s in the U.S. that overaccumulation began to manifest itself. Hence, Mandel is incorrect on theoretical grounds as well as empirical grounds. The strength of my approach is to concretely specify the MEC as the driver of accumulation. Hence, the inducement to invest on a more concrete level is a function not of movements in the rate of profit, nor in the mass of profit, but movements in the MEC.

[123]Grossman, *The Law of Accumulation*, 61.

However, as accumulation shifts from its "early" to its "late" phase, the growth rate of the mass of profit begins to decline and accumulation necessarily slows. We will see below how this relates to the MEC, the fundamental driver of accumulation. As accumulation slows down, the system becomes unstable and is more likely to enter a deep crisis during the downward phase of one of its periodic investment cycles or as it is subjected to historically contingent shocks to profitability. To be sure, the slowed rate of growth of the mass of profit, and hence accumulation, ushers in a long period of stagnation and instability in which the recessionary phase of the investment cycles become longer and deeper. This is simply the flipside of a period of relative stability in which the growth rate of the mass of profit has not yet declined to critical levels and the rate of accumulation is high.

The figure below represents the above dynamic graphically. Though the point of absolute overaccumulation occurs at time 11, the entire period preceding that point is one of slowing accumulation and growing instability, i.e. the movement from the "early" to the "late" phase of accumulation. For even though the mass of profit is growing absolutely, its rate of growth is slowing.

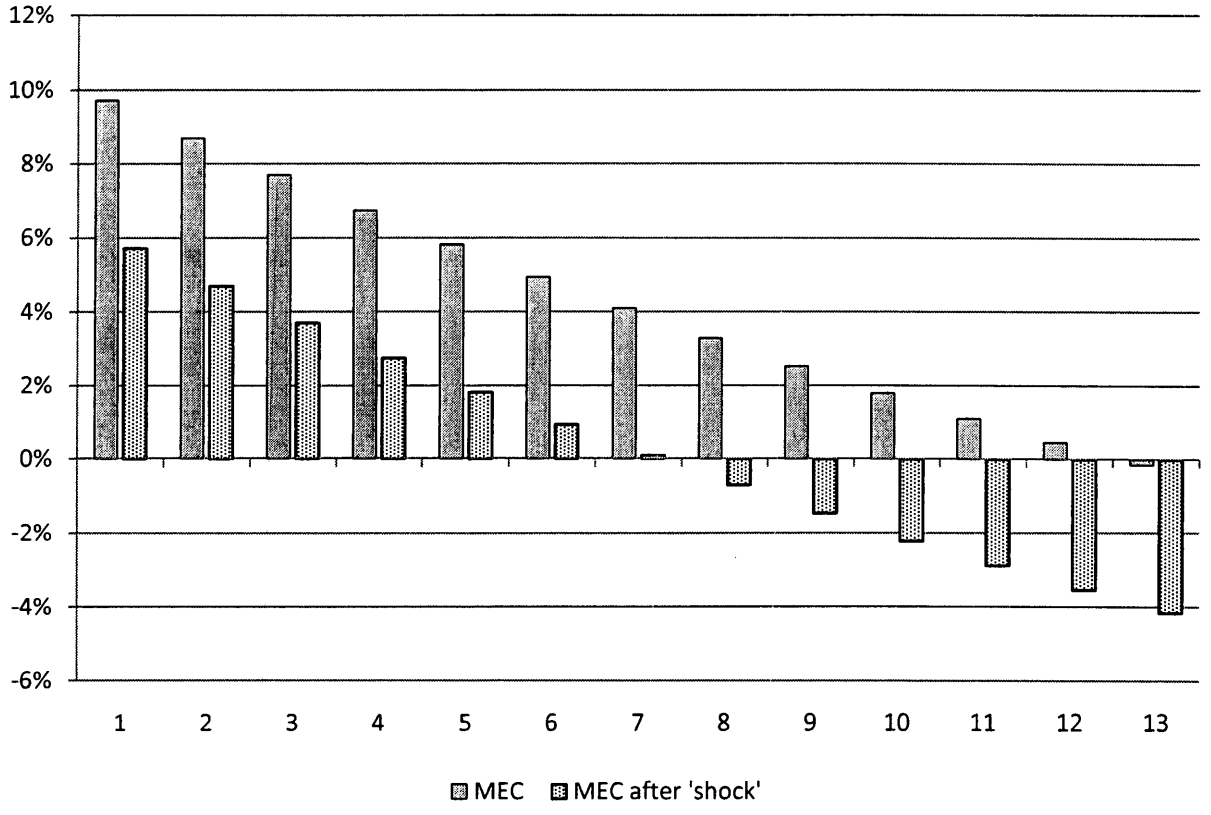
**Figure 5. Mass of profit grows at a slowing rate**




We can be even more precise. As we have seen, the growth rate of the mass of profit does not govern the incentive to invest directly. This is mediated by the marginal efficiency of capital. As long as the mass of profit is growing, the MEC will be positive. Nevertheless, the mass of profit does not tell us about the MEC *level.* It is the latter that determines long periods of stability and instability. Like the growth rate of the mass of profit, the MEC slopes downward as accumulation proceeds. Therefore, the "early" and "late" phases of accumulation are defined by relatively high and low MEC levels, respectively. As the mass of profit growth rate begins to slow, the MEC begins to decline and the economy becomes less buoyant and more susceptible to shocks. Not only is accumulation slowing down – with all of its accompanying ills (e.g. higher unemployment, slower productivity growth, etc.) – but as the MEC slows and approaches

zero, little shocks to profitability begin to have very large effects. This is demonstrated graphically below.

**Figure 6. The early and late phases of capital accumulation**




The graph above demonstrates theoretically the MEC as it declines from the "early" to the "late" phases of accumulation. Keeping in mind that the MEC is the driver of accumulation, a continually declining MEC in the face of the turbulent character of capitalist accumulation and the investment cycles with which it intersects will produce deeper and longer crises. To be sure, when the downturn of the investment cycles (or other endogenous or exogenous shocks) intersect with ever-shrinking MEC levels, it becomes ever more likely that these profitability shocks cause the MEC to decline below

zero. The graph above applies a "shock" of four-percent to each point in time to demonstrate that the frequency of crisis increases as accumulation proceeds from its "early" to its "late" phase. When the MEC drops below zero, a general interruption in capital accumulation occurs. Crises tend to get deeper and longer in the "late" phase of capital accumulation. A low MEC combined with shocks to profitability generates deeper crises.Kliman applies the same thinking, but to the rate of profit, identifying shocks to the latter as the determining factor in crisis formation. As I have already shown, this is incorrect, as the rate of return on total investments has no *direct* bearing on investment in new capital stock or labour power. It is only the returns on the latest investment that determine whether investment will continue.

Since they are inherent to the dynamic of capitalist accumulation, shocks to profitability generated by the investment cycles are important to our analysis. Given their endogeneity and periodic occurrence, a theoretical analysis of these cycles is required. It is to an analysis of the inventory and fixed investment cycles that we turn in the next section. First, however, to sum up the foregoing section, it is movements in the MEC that determine periods of stability and instability in capitalism. And the MEC is internally related to the same processes that lead to a falling rate of profit and, eventually, a stagnating mass of profit. Since investment is determined concretely, however, it is proper to focus on the MEC as the direct driver of investment and, therefore, accumulation.

**Investment cycles**

The business cycle model employed in this dissertation is that developed by Anwar Shaikh from the Harrod-Domar model. I have chosen this model because it can be easily integrated into a classical Marxist framework. In fact, Joan Robinson noted how closely the Harrod-Domar growth model resembled Marx's reproduction schema. Indeed, Marx shared a vision with Harrod and Domar of endogenously generated growth.[124]Moudud highlights three characteristics of this model that make it highly compatible with the classical Marxist model. First, the model points to "an endogenously generated growth path driven by investment in which the capacity utilization rate is at some normal level." This is called the "warranted growth path". Second, "the warranted growth path is consistent with varying degrees of unemployment." Third, Harrod was concerned to model the conditions for endogenously generated instability.[125]

However, the Harrod-Domar model suffers from a serious defect; i.e. the so-called "knife-edge" problem, whereby the model generates explosive growth or stagnation in the context of excess demand or excess capacity, respectively. In other words, the conditions for achieving Harrod's warranted growth rate – where all savings are absorbed by investment – are highly restrictive. Anwar Shaikh has provided a compelling solution to this problem by demonstrating the processes whereby the model would diverge from and converge on the warranted growth path. In this way, Shaikh further developed the classical Marxist framework for analysing the short- and long-run

[124]Moudud, *Strategic Competition*, 65.
[125]Moudud, *Strategic Competition*, 65-66.

dynamics of capital accumulation. This section elaborates the business cycle model developed by Shaikh in the late 1980s.

In this model, there is no assumption of any balance between aggregate supply and demand or aggregate capital disbursements and internal finance. Capitalist production is anarchic and is characterised by constant discrepancies and shocks. These shocks are central to the model. First we will examine the short inventory investment cycle, and subsequently we will examine the long fixed capital investment cycle.

Since supply and demand are never actually in equilibrium, excess demand characterises the system. Positive excess demand is that which cannot be met by current supply. If excess demand is positive, then "realized profits will be greater than potential profits."[126] In this circumstance, firms must increase investment in circulating capital to meet demand and to take advantage of increased profitability. Since the internal finances of the firm are the profits remaining from the previous production period, firms will need to borrow the sum equivalent to meet excess demand. To be sure, additional investment to meet excess demand must be fuelled by credit.[127] To repeat, excess demand encourages investment because it translates into above-potential-profit levels; however, this investment is premised upon borrowing. Borrowing implies future finance charges. Therefore, periods of excess demand are internally limited by the acceleration of future finance payments as the system grows. Contrary to other business cycle theories, not the interest rate, but the magnitude of business debt is central to this theory of the business cycle. The internal profitability of the system drives "accumulation and the consequent

[126]Shaikh, "Accumulation, Finance, and Effective Demand in Marx, Keynes and Kalecki", 67.
[127]Ibid, 70.

debt burden" constrains it.[128] Hence, Shaikh argues that business investment responds "positively to the level of excess demand and negatively to the burden of debt service payments."[129] Expansions are fuelled by excess demand and contractions are caused by cumulative debt service payments.

From the standpoint of the firm, if internal finance increases relative to potential profits, a concomitant increase in the rate of accumulation of circulating capital will ensue. If internal finance decreases relative to potential profit, the rate of accumulation of circulating capital will decrease. The availability of internal finance depends upon profits from the previous period and current debt-service payments. Once the latter become too great, borrowing slows down and a period of slower growth ensues. A period of slow growth allows business time to pay back its debts through normal profit-generation at a reduced rate of investment (i.e. at a rate of investment that does not require credit). As the internal financial position of the firm becomes healthier – i.e. as internal finance begins to increase relative to potential profits – the rate of accumulation of circulating capital will increase. The next cycle begins when the system is exposed to another endogenous shock. In this way, short-run adjustments in circulating investment cycle endlessly around expanded reproduction. This is the short cycle, which generally lasts 3-5 years.

Short-run investment in circulating capital is complemented by investment in fixed capital. In a period of excess demand, capacity will be insufficient to meet the demands of production. Therefore, firms will invest in fixed capital to increase capacity.

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[128]Ibid, 72.
[129]Ibid, 81.

The decision to invest in fixed capital takes longer than the decision to invest in circulating capital, but investment in fixed capital is subject to the same debt constraints. As investment in fixed capital accelerates, capacity will grow, but eventually investment in circulating capital will have to slow down as a result of the debt that that investment implies. Investment in circulating capital will slow and cycle around normal capacity utilization. This is the long cycle, which generally lasts 7-10 years.

So far we have seen the relationship between the dual character of labour embodied in commodities, the falling rate of profit that is its result as well as its relationship to the stagnating mass of profit. We have seen, moreover, how these processes are related to the marginal efficiency of capital (MEC) and its role in determining long phases of stability and instability. In particular, in phases of stability, the MEC will be high and positive. In phases of instability, it will be low and eventually zero or negative. Moreover, we have seen how the investment cycles are related to the MEC; i.e. how the shocks to profitability these produce result in short and shallow recessions or "growth cycles" in periods of a relatively high MEC and deep and long recessions or depressions in periods of a relatively low MEC. Throughout, we have highlighted the importance of the continuation of accumulation to stable capitalist reproduction. Above we have seen how an interruption in capital accumulation creates instability. In particular, we have seen how the conditions required for proportional growth and how these conditions become increasingly undermined in the "late" phase of capital accumulation and at the point of overaccumulation or failed valorisation. In this circumstance, proportional growth of the departments becomes impossible.

It is these same crises, however, that can create the conditions for the restoration of accumulation and expanded reproduction on a new foundation. In the next section, I will show how crises can serve to improve the rate and mass of profit as well as the MEC and usher in a long period of renewal. This process, I will argue in Chapter 3, was the foundation for the long period of stability in Canada, from 1993-2008.

**Crisis and renewal**

As I have already noted, when cycles of overinvestment intersect with the descending curve of capitalist development, represented by a low MEC, recessions become long and deep.Moreover, as the MEC approaches zero, accumulation becomes increasingly unstable. By the time the MEC reaches zero or turns negative, "absolute overaccumulation" sets in. The mass of profit stagnates and so too does the economy. Profound slumps of this kind serve as potential pivot points for capital. Since the cause of overaccumulation is a dearth of surplus-value relative to constant capital, a period of renewal requires a change in the ratio of surplus-value to constant capital. The causes that effect a change in this ratio can be multiple and varied. History has infinitely more imagination than we have.[130] However, for capitalism considered at the current level of abstraction, we must examine how crises effect changes in profitability directly and how these changes manifest themselves in movements of the MEC. As I have shown, the immediate determinants of profitability are the rate of surplus-value, the organic composition of capital and turnover time. Once the MEC turns zero and a crisis of absolute overaccumulation has set in, powerful countertendencies come to bear on these

[130] Alain Lipietz, *Mirages and Miracles* (London: Verso, 1987): 11.

variables. In part, surmounting the crisis is a function of these countertendencies; in part, it requires the conscious efforts of the capitalist class and the state.

The crisis unleashes a large wave of bankruptcies and unemployment. The fear of unemployment increases the pliancy of labour; and the growth of the reserve army depresses wages. The weakened state of labour allows for the *possibility* of the reorganization of the workplace and the implementation of new technologies. Whether or not this happens will be the outcome of class struggle. The immediate boon to capitalist production is the reduction of real wages. At the same time, bankruptcies reduce the organic composition of capital by destroying constant capital. When a firm files for bankruptcy, its assets must be auctioned off in order to pay off its creditors. Machinery and equipment are sold at fire-sale prices. The result for capital as a whole is a reduction of the organic composition of capital accompanied by a drop in the price of unsold fixed and circulating capital. In other words, the value represented in machinery, equipment and raw materials (constant capital) is reduced. These changes are reflected in an improved MEC for firms still in a position to invest. The MEC, remember, is the returns on the *latest investments*. In the context of a crisis of this sort, the price of additional units of labour has fallen, as has the price of capital equipment and raw materials. Hence, there is an improvement in the MEC and new incentive to invest. Moreover, the firm that bought up machinery cheaply now has excess investment funds. These funds may be invested in new technological and organizational innovations if labour is sufficiently pliant; especially since new inventions have been accumulating over

the long downturn.[131] New technologies that are adopted tend to increase the rate of exploitation further and reduce the turnover time of capital. In the long run, they may also cheapen the elements of constant capital. In these ways, the crisis creates the conditions for renewed accumulation. An ascending curve of capitalist development ensues.

**Conclusion**

In this chapter, we have explored the long and short-run dynamics of capital accumulation in theory. I have emphasised the importance not of the *rate of profit*, nor strictly of the *mass of profit* to continued accumulation. Instead, I have highlighted the importance of what Keynes called the marginal efficiency of capital (MEC). In other words, business investment and therefore accumulation will continue so long as the returns on the latest investments are positive. I have shown how this is the driver of accumulation and, at the same time, how it is internally related to the more fundamental processes of long-run profitability. I have argued that movements in the MEC, *not the rate of profit*, are central to understanding long periods of stability and instability. In the "early" phase of capital accumulation, the MEC is high and stability prevails. As accumulation continues apace and enters into its "late" phase, the MEC progressively approaches zero. In this "late" phase, the economy is more sensitive to profitability shocks, because the MEC can more easily be driven below zero. In the same way, this is how the long-run movements in the MEC intersect with investment cycles. I have shown that once the MEC achieves zero – in terms of its long-run tendency – the class struggle

[131] Ernest Mandel, *Late Capitalism* (New York: Verso, 1993), Chapter 4.

can act as an important trigger for crises. Absolute overaccumulation (this is, after all, what an MEC of zero implies) means that the value produced is not sufficient to maintain accumulation, unless wages can be reduced. Hence, wages increasingly *get in the way* of further accumulation in this late phase. It is in this context that the class struggle, if successful – i.e. if workers are able to maintain their wages level – can act as a trigger for the crisis. Once this crisis occurs, however, it is possible for favourable conditions for the renewal of capital accumulation on a new foundation to be met. The above theory shall inform the rest of this dissertation. It is to my account of the last three decades of capitalist development in Canada that our attention now turns.

Depression is a precondition for prosperity; prosperity comes to an end in a new depression. They are, so to speak, two sides of the same coin.[132]

– Paul Mattick

## Chapter 2: The Dynamics of Accumulation and Breakdown, 1974-1992

In the previous chapter, I examined in great detail the theory of overaccumulation, or failed valorisation, as developed by Henryk Grossman in his *The Law of Accumulation and Breakdown of the Capitalist System: Also Being a Theory of Crisis*. In this chapter, I demonstrate the explanatory power of this framework by analysing the dynamics of growth and breakdown in Canada between 1974 and 1992. In what follows, I argue and empirically validate the claim that economic instability between 1974 and 1992 was a result of overaccumulation. I demonstrate that a slowdown in the growth rate of the mass of profit – reflected in a shrinking marginal efficiency of capital – accounts for the escalating severity of crises in the 1980s and early 1990s, and that the crisis of the early 1990s was the result of absoluteoveraccumulation, and I relate these events to the more fundamental dynamics of accumulation (most importantly, the rising organic composition of capital). The depth and breadth of the crisis and the subsequent depression provided the necessary context for the re-establishment of accumulation in Canada beginning around 1993, the subject of Chapter 3.

In the first major section of this chapter, I examine some of the scarce literature on the historical dynamics of profitability and accumulation in Canada. In the second major section, I examine the rate of profit and its determinants, including the rate of surplus-value, the organic composition of capital and turnover time. I argue that the long-run

[132]Paul Mattick, *Marx and Keynes: The Limits of the Mixed Economy*. (London: Merlin Press, 1969): 83.

instability to which the Canadian economy was subjected throughout the 1970s, 1980s and 1990s can be understood by examining the interactions between the movements in the rate of profit, the mass of profit and the marginal efficiency of capital (MEC). In the third major section of this chapter, I examine in great detail the crisis of the early 1990sin Canada and the ensuing depression. In this section, I argue that the economic turmoil of the early 1990s must be understood in relation to the long-run tendencies of capitalist development in Canada. In particular, I argue that the dynamics resulting in a falling rate of profit eventually must usher in a stagnating or shrinking mass of profit (MEC $\leq$ 0). I argue that the latter is the fundamental reason for the breadth and depth of the early 1990s crisis.

Before beginning my analysis, I would first like to say a word about the Marxist ratios deployed in the next section. The purpose of any measure is to illuminate a particular relation. The particular measures I use in this section always stand in close relation to the aspect of reality I seek to explain. For instance, the reader will notice that I use different measures for the rate of profit. This is not an inconsistency. As Kliman correctly points out, "the most relevant rate of profit to consider always depends upon the particular question being addressed." Moreover, "because there is no all-purpose measure of 'the' rate of profit, it is not legitimate to reject a particular measure on the grounds that it fails to fulfill an all-purpose role."[133] In the first section, I seek to demonstrate how the rate of profit relates to the rate of surplus-value, the organic composition of capital and turnover time. To this end, I develop a proxy measure for the

[133] A. Kliman, *The Failure of Capitalist Production: Underlying Causes of the Great Recession* (London: Pluto Press, 2012): 94.

rate of profit that incorporates in the numerator a broader measure of "profit" (surplus-value), including e.g. wages and salaries paid to nonproduction workers. Later on, when examining the dynamics of accumulation and crisis on a more concrete level, I deploy a measure for the rate of profit more appropriate to that level of analysis; namely, one that includes business sector corporation profits and interest payments before taxes, but does not include wages and salaries of nonproduction workers. In that instance, the question is not one of relating the Marxist ratios to the rate of profit, but of demonstrating the crucial turning points in business profitability and their relation to the marginal efficiency of capital and crisis (in particular the crisis of the early 1990s).[134] In this context, the broader measure for the rate of profit is inappropriate. In the same vein, to demonstrate the *long periods* of stability and instability – as they are determined by capital investment – I examine a measure for the marginal efficiency of capital. Still in other places, where I seek to illuminate e.g. the *relative movements* of the rate and mass of profit in the U.S. and Canada, I use *indices* because the *levels*of the rate and mass of profit are not relevant

[134] An analysis of the difference between these two profit rates principally via the movements in the magnitude of nonproduction worker wages and salaries is beyond the scope of this chapter. On a more concrete level, i.e. considering the rate of profit as it concerns accumulation more directly and after distribution, the growth of unproductive activities (insofar as they form a component part of surplus-value) likely contributed to the falling rate of profit in this period. Wages and salaries of unproductive labour grew as a percentage of total wages and salaries. In 1981 this ratio stood at 13.76 percent. By 1992 it reached 17.33 percent. To put it differently, in 1981 approximately 16 cents were paid out in nonproduction wages and salaries for every dollar paid out in production wages and salaries; by 1992 this number had risen to 21 cents. An analysis of unproductive activities must occur on a lower level, i.e. after distribution. For this reason, its components must be disaggregated into the flows stemming from variable capital (i.e. taxes on workers) and surplus-value (unproductive labour-power purchased and taxes). From this perspective, unproductive labour cannot strictly be considered surplus-value. The broader rate of profit measure deployed in this study does not use this disaggregated approach, and in this sense it is one-sided. I am reserving an analysis of the relationship between unproductive labour and the rate of profit to a future study. This gap does not affect this study because, first, accumulation and crisis are determined by movements in the mass of profit considered in the narrower sense, i.e. after unproductive labour compensation has been deducted from surplus-value, i.e. on a more concrete level than that considered in this section of the chapter. Second, this gap is not likely to affect the downward trend in the (broader) rate of profit.

to the question being asked. Finally, I have opted for Marxist *proxy measures* for the rate of surplus-value, organic composition, turnover time and (the broader) rate of profit. Although imperfect, these proxies are not likely to significantly skew the *tendential* movement of these ratios. More detail about these measures can be found in the Data Appendix. With the above caveats in mind, let us now turn to our review of the literature.

**Literature on the historical movements of profitability and growth in Canada**

There is an unfortunate paucity of literature on the historical dynamics of profitability and capital accumulation in Canada. In fact, to my knowledge there is no literature at all on the historical movements of the marginal efficiency of capital in Canada over the last period. There have, however, been a few pieces that look at trends in the rate of profit and capital accumulation over the last decades. In this connection, I will examine here the work of Murray Smith and K.W. Taylor, Mario Seccareccia and Fletcher Baragar as well as that of Jim Stanford.[135] I will begin with Stanford, whose approach is admittedly least commensurate with my own. I will follow this with a review of Seccareccia and Baragar and then proceed to Smith and Taylor. Throughout, I will situate my own work in this literature.

In *Paper Boom*, Stanford argues that the last decade of the twentieth century saw less investment in the "real" economy than in the so-called "paper" economy. He suggests that Canada's economy developed two personalities during the 1990s. The paper

[135] Jim Stanford, *Paper Boom: Why Real Prosperity Requires a New Approach to Canada's Economy.* (Ottawa: Canadian Centre for Policy Alternatives, 1999) and "Having Their Cake and Eating It Too – Business Profits, Taxes and Investment in Canada: 1961-2010." April 2011. *Canadian Centre for Policy Alternatives*; Mario Seccareccia and Fletcher Baragar. 2008. "Financial Restructuring: Implications of Recent Canadian Macroeconomic Developments." *Studies in Political Economy*, 82: 61-83; Murray Smith and K. W. Taylor. 1996. "Profitability Crisis and the Erosion of Popular Prosperity: The Canadian Economy, 1947-1991." *Studies in Political Economy*, 49: 101-130.

economy was booming while the so-called "real" economy was suffering. For Stanford, "the emergence of a huge financial bubble ... may have actually undermined the accumulation of real wealth by creating uncertainty about the stability of wealth and by diverting the creative energies of Canadians away from more concretely useful economic undertakings."[136]To make his case, Stanford cites declining net investment as a share of GDP.[137] This, it is supposed, is a sign of a diversion of funds away from productive investments. Unfortunately, he does not consider the effects of restructuring and organizational change on the fixed investment share of GDP. For instance, his graph demonstrates that the majority of the decline in investment was in buildings and structures in this period.[138]In this dissertation, I hope to demonstrate that this decline can be attributed to significant restructuring and organizational change with the introduction and proliferation of just-in-time production and distribution. As further proof of deteriorating investment, Stanford suggests that "the stagnation of real household incomes reflects the corresponding stagnation of the real economy where most Canadians earn a living."[139]Unsurprisingly, this view assumes that capitalism must be stagnantif its working population is living on stagnant income.Of course, capitalism can get by just fine – in fact thrives – on stagnant wages, as we have seen in Chapter 1. The goal of capitalist production after all is profit, not rising working-class income and consumption.[140]

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[136] Jim Stanford, *Paper Boom: Why Real Prosperity Requires a New Approach to Canada's Economy.* (Ottawa: Canadian Centre for Policy Alternatives, 1999): 34.
[137]Ibid, p. 148.
[138]Ibid, p. 154.
[139]Ibid, p. 36.
[140] Of course, this is not to say that capitalism cannot thrive with *rising wages* as well.

According to Stanford, the principal reason the paper economy became unhinged from the real economy and began to undermine it was a series of policy changes that "can be dated to about 1981" when "the goal of full employment" was explicitly abandoned.[141] Elsewhere he identifies this as "the point at which growth and job-creation were deposed from the podium of macroeconomic priorities in favour of inflation-control and financial profitability."[142] Since that time, high interest rates "have become a more-or-less permanent feature of Canada's economic landscape" and "slower economic growth, chronic unemployment, and a virtually permanent atmosphere of recession have been its long-term results."[143] To be sure, Stanford locates the source of the economic malaise squarely in fiscal and monetary policy choices. He argues that "interest rates, both short-run and long-run, are clearly an outcome of deliberate policy" and that falling profits are a result of government policy around "free trade and deregulation" that "heightened competitive pressures which businesses face."[144] There is however one exception that does not seem to be purely the result of policy. For Stanford, "the success of workers in winning higher incomes ... contributed to a long-term squeeze on the profitability of private business" as well.[145] As a result of all of these processes,there has been a significant "slowdown in economic growth since 1980."[146]

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[141]Ibid, p. 147. Importantly, the Canadian state never had a policy of full employment.
[142]Ibid, p. 158.
[143]Ibid, p. 147.
[144]Ibid, p. 232.
[145]Ibid, p. 247. For a critique of the wage-push profit squeeze theory, see Robert Brenner, *The Economics of Global Turbulence* (New York: Verso, 2006), pp. 19-24.
[146]Ibid, p. 165. Stanford attributes equal plausibility to three possible explanatory factors for economic slowdown (GDP growth, real interest rates and business profitability), but he does not examine the relationships between each factor. From the standpoint of classical political economy, GDP growth is determined by business investment. Investment, in turn is determined by profitability. If business can make a profit it will invest. Therefore, in terms of causality, the rate of profit is the most important factor,

The upshot of the above is to highlight that the principal problem for Stanford is one of policy.Indeed, the sense in which the laws of capitalist accumulation operate "behind our backs" appears to be entirely lost on him. For Stanford, the last decade of the last century was an era of "permanent recession" brought about by government policy aimed at controlling wage increases and inflation.[147] This policy was

> about redistributing the economic pie ... protecting real returns, helping stock markets reach still loftier heights, and generating huge capital gains on existing bonds. And the deliberate recreation of a large and permanent pool of desperate unemployed workers has done wonders for private employers in the real economy.[148]

Therefore, he concludes that "if investment and hence job-creation are too slow in Canada, this is primarily because of the way Canadian economic and financial policies have evolved over time."[149] Of course, the political logic of this position is that the apparent economic malaise finds its remedy in capitalist policy formation.

More recently Stanford published a piece that covers newer developments not addressed in his *Paper Boom*, but the argument is similar.[150] In "Having Their Cake and Eating It Too – Business Profits, Taxes and Investment in Canada: 1961-2010," he correctly begins by suggesting that "the vibrancy and success of business investment

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followed by the rate of interest. These factors – together – determine the rate of profit of enterprise. As we have seen above, according to Shaikh it is the latter that determines investment and GDP growth (Stanford seems to acknowledge this fact on p. 214). This dissertation differs from Shaikh insofar as it views the MEC minus the interest rate as the principal driver of business investment, as we have already seen above. The upshot is that Stanford misses these connections altogether, leaving us with a hollow statistical analysis.

[147]Ibid, p. 194.

[148]Ibid, p. 198.

[149]Ibid, p. 181.

[150] Jim Stanford, "Having Their Cake and Eating It Too – Business Profits, Taxes and Investment in Canada: 1961-2010." April 2011. *Canadian Centre for Policy Alternatives.*

spending is a central determinant of the overall state of the economy."[151] The principal point he makes in the piece is that corporate tax reductions over the last decades "have had no visible direct impact on business investment."[152] In other words, they have not sufficiently contributed to the growth of the capital stock. In fact, despite corporate tax rate reductions between 1988-2010 under Mulroney, Martin and Harper, business investment spending remained approximately two percentage points below postwar levels, at around "14 to 16 percent of GDP."[153] The result, Stanford suggests, is that "the average capital-labour ratio in Canada is actually *lower* than it was twenty years ago."[154] For Stanford, "this is an unexpected and worrying finding." Indeed, "we would expect the average Canadian worker ... to be utilizing more capital in their daily work than two decades ago, not less."[155] In addition to lower levels of investment as a portion of GDP and their apparent deleterious effects on the capital stock, the combination of significantly improved corporate profitability, lower corporate taxes and growing capital depreciation charges over the last period led to an increase in business after-tax cash flow.[156] Hence, Stanford concludes, the difference between investment and cash flow has been growing over the last two decades, and this has resulted in a large quantity of funds that "have not been ploughed back into new expenditures on fixed non-residential capital in Canada."[157]The parallels with *Paper Boom* spring to the eye. To be sure, the gap between after-tax corporate cash flow and business investment in fixed non-residential

[151]Ibid, p. 5.
[152]Ibid, p. 6.
[153]Ibid, p. 7.
[154]Ibid, p. 9.
[155] Ibid.
[156] Ibid.
[157] Ibid, pp. 9-10.

capital stock has resulted in "excess corporate saving."[158] These excess funds have flowed into "excess" dividend payouts, "excess" accumulation of cash and short-term financial assets, the reduction of debt, a net outflow of FDI as well as share buybacks and acquisitions.[159] The upshot, for Stanford, is that not enough of this "excess corporate saving" is being reinvested in the capital stock; or, to use the language of *Paper Boom*, too much money is flowing into the "paper" economy and not enough is being invested in the "real" economy. As a result, "spending power, job-creation, and productivity growth" have suffered.[160] For Stanford, improving demand-side conditions by increasing corporate taxes and investing in public infrastructure would be a significant boon to the economy and would put these funds to good use. Here, too, the solution to the apparent malaise is to be found in capitalist policy formation.

Importantly, many of the factors that Stanford sees as ills over the last decades are – from a Classical Marxist standpoint – beneficial to capital accumulation and reproduction. For instance, he writes that "the capital stock is barely keeping up with the growth in Canada's working population as a result of the investment slowdown"[161] and is "inadequate to Canada's needs for more capital."[162] However, he does not take into consideration that the apparent shrinking of the capital stock may be a reflection of a change in its *price* or *value.* He does not consider what is happening to the capital stock in *physical terms*. In either case, he identifies the *declining* capital-labour ratio as something that we should be concerned about. However, from a Classical Marxist

[158]Ibid, p. 13.
[159]Ibid, p. 13.
[160]Ibid, p. 27.
[161]Ibid, p. 9.
[162]Ibid, p. 27.

standpoint, a declining capital-labour ratio reflects a falling organic composition of capital and is therefore a boon to capital accumulation. We will investigate the actual trends in the organic composition of capital for Canada below. We will see that this was, indeed, an advantage to profitability and business investment over the last twenty years in Canada. Let us now turn to examine the work of Baragar and Seccareccia on the recent period of Canadian capitalism.

In "Financial Restructuring: Implications of Recent Canadian Macroeconomic Developments," Baragar and Seccareccia argue that growth since the 1990s has been driven principally by consumer debt. The argument runs as follows: the fiscal revolution and the low-inflation regime established by government policy-makers in the 1990s created a situation of public surpluses for the first time in decades. At the same time, the restructuring of the private sector in the 1980s and 1990s led to a great increase in profitability. In turn, this led to robust levels of investment – levels not seen since the peaks of 1974 and 1981.[163] However, the latter was organized at the expense of labour. In particular, the following measures shifted the balance of power in favour of capital: lean production, the restructuring of employment insurance, statutory retrenchment for public services as well as the proliferation of user fees, the use of unemployment to combat inflation and the state's growing role in controlling labour.[164] These developments contributed to the formation of large corporate surpluses, as identified by Stanford above. As a result, the corporate sector began to lend to the working class, whose wages had not

[163]Mario Seccareccia and Fletcher Baragar. 2008. "Financial Restructuring: Implications of Recent Canadian Macroeconomic Developments." *Studies in Political Economy*, 82: 61-83, p. 69.
[164]Ibid, p. 73.

kept up with the growth of productivity. In the context of low interest rates and easy money, the working class began to take on mortgages. As housing prices began to rise, workers who owned homes were able to gain access to additional credit.[165] As a result of these processes, the government and corporations have reduced their debt-loads, while working-class debt has increased substantially. To be sure, however, "strong and sustained consumer spending is playing a major role in pushing demand and supporting growth in the Canadian economy."[166]

So, how is what I am proposing different from Baragar and Seccareccia? Whereas for me the key determinant of capitalist stability is the MEC minus the interest rate and its relation to Marx's value categories and capital accumulation, for Baragar and Seccareccia, in this piece, it is effective demand. In their analysis of recent macroeconomic developments in Canada, the authors argue that the long period of stability in question was based upon an unsustainable and unequal distribution of wealth. Indeed, "the new century in Canada is marked by a virtually unprecedented stretch of public sector surpluses, private corporate surpluses, and household sector deficits."[167] To remedy the situation, the authors suggest a return to the policies of the postwar "Golden Age" in which growth was sustained "by a virtuous cycle of rising real wages and productivity, propelled forward via expansionary fiscal policy."[168] From a Classical Marxist perspective, these policy suggestions do not address the contradictions of capitalist society at a more fundamental level. In other words, as we have already seen, it

[165]Ibid, p. 77.
[166] Ibid, pp. 78-79.
[167]Ibid, p. 62.
[168]Ibid, p. 81.

is growth itself that ushers in stagnation. Productivity increases ultimately reduce profitability by increasing the organic composition of capital; and accumulation – not rising real wages – must be maintained for capitalism to have any viability.

In a recent unpublished paper, Baragar is more attentive to Marx's value categories in describing the processes that unfolded in the period before the early 1990s recession and the neoliberal growth regime that got underway afterwards. He appropriately identifies "declining profitability" as the principal problem facing North American capitalism in the 1970s and 1980s, and argues that the turn to neo-liberal policies conceived of as "a concrete program of reconfiguring markets and restructuring production" was effective for capital insofar as it consolidated its power, raised the rate of surplus-value, restored profitability and shifted the distribution of wealth to those at the top.[169] In particular, it was the imposition of monetarist policies that forced uncompetitive firms to go bankrupt, thereby destroying capital values and weakening labour. The result was a reduction of the organic composition of capital and an increase in the rate of surplus-value.[170] To be sure, the shift to neoliberal policy occasioned restructuring in this period. Indeed, "supply-siders … prevailed in the corridors of power as well as in the halls of academe … The attendant restructuring swept through the economy and renewed profitability was duly forthcoming."[171] In turn, the program of austerity implemented at the time acted to improve profitability, to "stabilize the macroeconomic framework" and to "lay the foundation for renewed accumulation" by

[169]Fletcher Baragar. 2013. "Austerity and Capital Restructuring." Unpublished manuscript, pp. 8 and 1.
[170]Ibid, p. 3.
[171]Ibid, p. 4.

weakening labour and freeing up capital to effect the restructuring that would favourably alter the constant and variable components of capital.[172]

The latter approach to the period is admittedly much closer to my own than the two analyses preceding it. By deploying value categories and focusing on profitability and the organic composition of capital, Baragar offers a much deeper analysis. There are, however, some important differences with my theorization. First, Baragar locates the renewal of accumulation in the mid-1990s in neoliberal policy and a program of austerity. In fact, my research demonstrates that the conditions for renewed accumulation in Canada began to be established beforeneoliberal policies were fully adopted in Canada (with the election of Jean Chrétien in 1993) and before substantialausterity policies came into effect (e.g. with the implementation of Bob Rae's Social Contract in 1993). Indeed, bankruptcies and the concomitant reduction in the price of machinery and equipment began as early as 1988 (but only really took off after 1990), as we will see in Chapter 3. The austerity measures undoubtedly contributed to the weakening of labour, but the crisis of the early 1990s had already dramatically increased the industrial reserve army of labour, as we will see later on in this chapter. In other words, austerity largely took place in the context of the renewal of capital accumulation. Indeed, that is why it successfully resulted in a rebalanced budget by 1995. To be sure, Baragar emphasizes the consciousactivity of the capitalist class in the process of restructuring to the exclusion of the developments that occur "behind the backs" of these actors. Second, Baragar tends to

[172]Ibid, p. 5.

lump in the processes occurring in Canada with those that occur in the U.S.[173]This dissertation demonstrates that the long-run dynamics of capital accumulation in Canada and the U.S. are in fact quite distinct.

Before turning to my analysis of the long downturn, it is worth examining the work of Murray Smith and K.W. Taylor on the same topic and how their interpretation of events differs from my own. In their 1996 article, entitled "Profitability Crisis and the Erosion of Popular Prosperity: The Canadian Economy, 1947-1991," the authors argue that Canada's economic malaise at the time had its roots in the falling rate of profit (which began in 1950).[174] They assert that "contemporary capitalism is indeed in crisis" and that this is the fundamentally the result of a growing organic composition of capital.[175] In the course of their article, they make an important distinction between "capitalist prosperity" and "popular prosperity."[176] Importantly, they define capitalist prosperity has "an economic situation marked by 'adequate' rates of return on invested capital, that is to say, a *high average rate of profit*."[177] Popular prosperity, on the other hand, refers to "an economic situation characterized by low levels of unemployment and rising average living standards."[178] These two forms of prosperity were reconciled in the postwar period; however, due to the falling rate of profit, contemporary capitalist prosperity increasingly takes place at the expense of popular prosperity. The authors

[173]Ibid, p. 2.
[174]Murray Smith and K. W. Taylor. 1996. "Profitability Crisis and the Erosion of Popular Prosperity: The Canadian Economy, 1947-1991." *Studies in Political Economy*, 49: 101-130.
[175]Ibid, p. 103.
[176]Ibid, p. 106.
[177] Ibid, pp. 104-5.
[178]Ibid, p. 105.

argue that "inadequate" rates of return – and they do not specify what this means – have caused the economic malaise.

There are a number of problems with this approach. First, "adequate" rates of return to induce investment are not specified. To be sure, the authors provide no basis from which to judge what constitutes a "high average rate of profit" or a low average rate of profit. Hence, they fail to demonstrate how capitalist investment is *objectively limited* by profitability. To be sure, their analysis leaves plenty of room for subjectively determined investment levels. After all, that which may be deemed an "adequate" rate of return for one capitalist may not be for another and so on (even if we are speaking of movements in the average rate of profit). In this way, capitalist investment becomes subjectively limited instead of objectively limited, despite their claims to the contrary. Second, in the same way, they assume the rate of profit governs accumulation directly. Following Grossman, my approach is different in that it demonstrates the *objective* limits to further investment in fixed capital and hence accumulation based upon movements in the mass of profit and, in particular, the marginal efficiency of capital. Third, as a result of these problems, they are unable to identify key turning points of central importance to the dynamics of growth and crisis. Smith and Taylor discuss stagnation, but do not specify the mechanisms of crisis formation, especially as concerns that important turning point for capital in this country, i.e. the Great Canadian Slump of 1990-92. To be sure, they do not specify the mechanisms of breakdown. This element of the analysis is left very vague and is admittedly a significant weakness in their approach. Their silence on the question of the eruption of the early 1990s crisis can be attributed to the theoretical

limits of reducing the dynamics of capital accumulation to movements in the rate of profit. Below I will show how re-focusing our attention on movements in the mass of profit, like Grossman, and in particular on the marginal efficiency of capital, allows us*both* to pinpoint the mechanisms leading to the outbreak of the crisis of the early 1990s*and* to identify the reasons for increasing economic difficulties leading up to that point. Fourth, the authors do not adequately distinguish the long-run patterns of capital accumulation in Canada from the rest of the world. Hence, they argue that "the basic trends with respect to productivity growth, the average rate of profit, the rate of new capital stock formation inthe private business sector, the real wage, and unemployment were typical of *the advanced capitalist world as a whole*."[179] In fact, the rate of profit in Canada and the U.S. followed distinct paths in this period, as we will see below. Moreover, their article was written three years after capital accumulation got restarted in Canada and two years after total compensation per hour worked began growing again (albeit at a slower rate than productivity growth), as we will see in Chapter 3. Thus the article is historically inaccurate regarding events in Canada and does not deal with how they differed from events in the U.S. Let us now turn to my interpretation of the dynamics of accumulation and breakdown between 1974 and 1992.

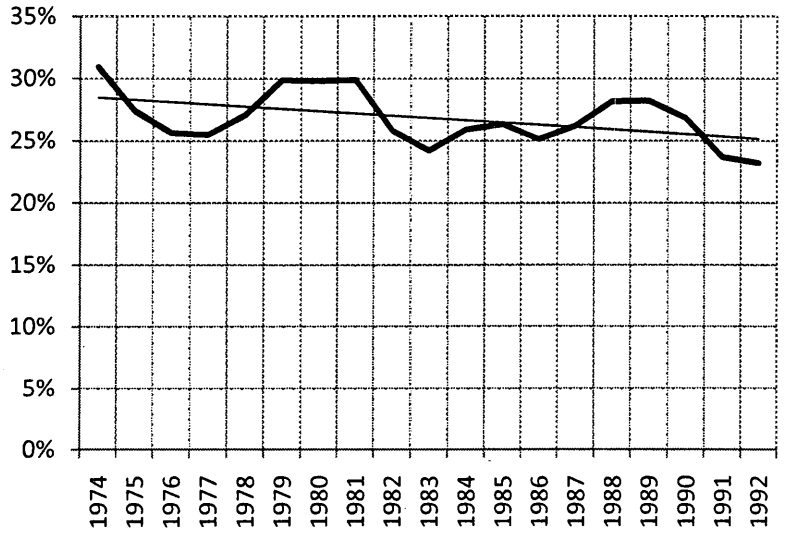
**The tendential fall of the rate of profit in Canada**

In the years 1974-1992, GDP growth and employment rates fluctuated considerably. In this section, I will explain the dynamics of capitalist accumulation in Canada during these years by means of the theory outlined in the previous chapter and the empirical data

[179] Ibid, p. 108, emphasis added.

at hand. As 1974 is widely recognized as the year the Canadian economy took a turn for the worse, I will use this year as the starting point for my analysis.[180] For the purposes of this analysis, I have derived Marxist proxy measures from Statistics Canada's national accounts. Let us now turn to these figures.[181]

**Figure 7. Rate of profit falls, 1974-92**



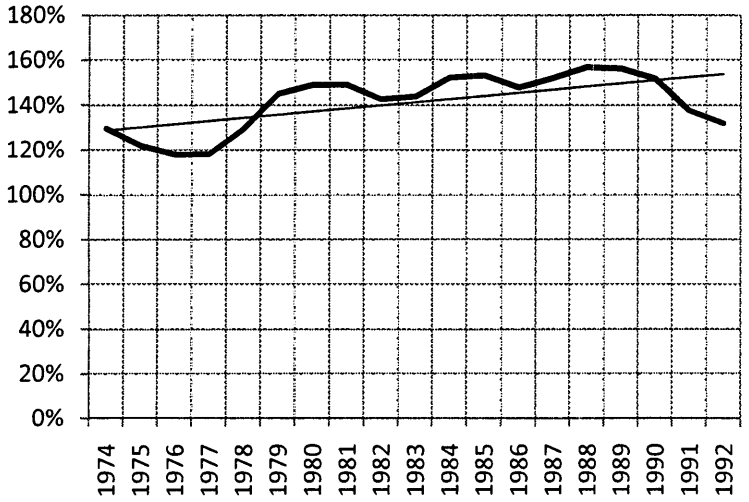

Source: See Appendix

Figure 7 above demonstrates the downward trend in the average rate of profit. The average rate of profit measures aggregate profit (surplus-value)over gross fixed capital stock of the previous year (constant capital).[182] Profit is the life-blood of

[180] Kenneth Norrie, Douglas Owram and J.C. Herbert Emery, *A History of the Canadian Economy*, 4th ed. (Toronto: Thomson Nelson, 2004): 402.
[181] For data sources and methods, see Appendix.
[182] To be sure, this measures the gross rate of profit. The gross rate of profit measures total surplus-value over gross fixed capital stock, whereas the net rate of profit measures surplus-value minus nonproduction worker wages over fixed capital stock. At this level of abstraction, when dealing with the effects of the organic composition of capital, the rate of surplus-value, etc. on the rate of profit, the gross rate of profit is used. The net rate of profit is a more concrete measure with slightly more complex determinants; i.e. taking into consideration the growth of nonproduction activities and their determinants. A full discussion of these determinants of the growth of nonproduction labour is beyond the scope of this dissertation.

capitalism. Without it, no accumulation can take place. The rate of profit tells us about the overall "health" of the economy. As I have shown, a falling rate of profit is a necessary, but not a sufficient condition for instability. Movements in the mass of profit – and their reflection in the MEC – are the key to periods of stability and instability. Before examining the mass of profit and the MEC, let us turn our attention to the determinants of the rate of profit.

**Figure 8. Rate of surplus-value rises, 1974-92**

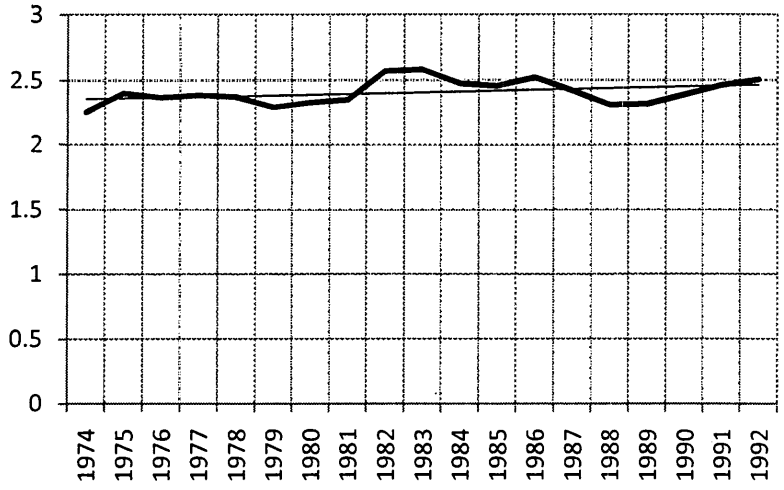



Source: See Appendix

As we have seen, the theory tells us that the rate of profit can fall despitemovements in the rate of surplus-value. This holds true empirically as well. The fall in the rate of profit cannot be attributed to a fall in the rate of surplus-value in this period, as the latter grew throughout most of the 1980s as the rate of profit was falling (see Figure 8 above). In other words, a falling rate of surplus-value was not the cause of

the falling rate of profit in this period. I will explore the political implications of this fact later.

**Figure 9. Organic composition of capital rises, 1974-92**




Source: See Appendix

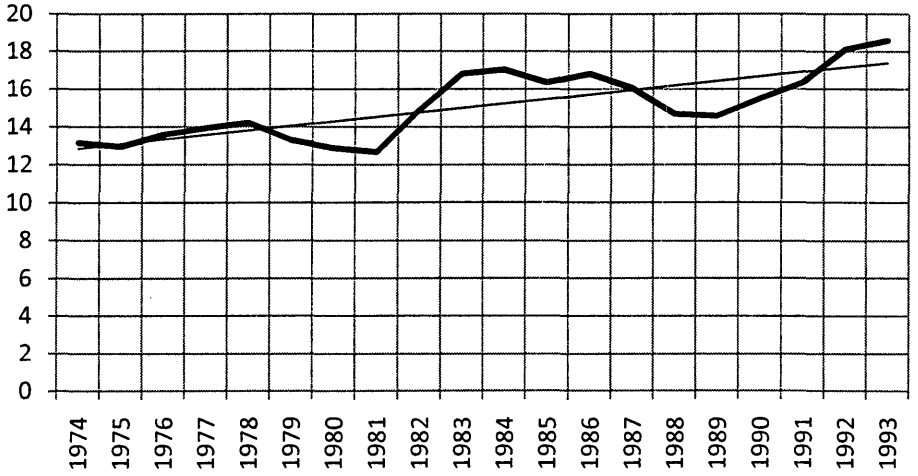
According to the theory, a rising organic composition of capital contributes to a falling rate of profit. Unlike with the rate of surplus-value, there appears to be a strong relationship between the organic composition of capital and the rate of profit in the period leading up to and following the early 1990s economic crisis.

The organic composition fluctuated cyclically throughout the period (a result of the dynamics of the business cycle, already explained in Chapter 1 and to be explored in more detail empirically in Chapter 4), but it remained high and trended upwardsuntil 1993 (see Figure 9). A similar, downward trending pattern is apparent for the rate of profit. The significance of a high and rising organic composition and its relation to stagnation will become apparent when we turn to the post 1990-92 crisis trend, which

exhibits a downward movement coincident with a rising rate of profit and renewed accumulation.

As theorized above, a high organic composition indicates creeping overaccumulation. In part, this accounts for the slowdown of accumulation throughout the period (see Figure 13 below). A rising organic composition points to the internal limits of capitalist growth. As accumulation advances, accumulation itself becomes more difficult. As Marx put it, "the *true barrier* to capitalist production is *capital itself*."[183] Like with the rate of surplus-value, the political implications of this fact will be discussed below.

**Figure 10. Tunover time increases, 1974-93**



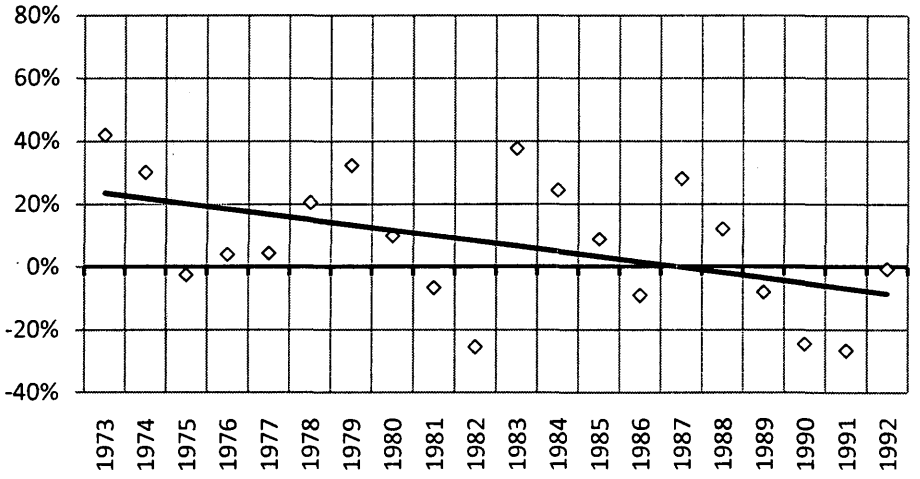

Source: See Appendix

Another important factor for the downward trending rate of profit in this period was the significant increase in turnover time (see Figure 10 above). Turnover time constitutes production and circulation time. In 1974, it would take 13 years to turn over

[183] K. Marx, *Capital*, Volume3 (New York: Penguin Books, 1991): 358.

gross fixed capital stock once; by 1992, it would take 18 years. This increase is likely a function of the growth of constant capital throughout the period. As I will demonstrate further below, capital found new ways to decrease turnover time throughout the 1980s and 1990s. These innovations were implemented in the restructuring that followed the crises of 1982 and especially 1990-92.

**Figure 11. Declining mass of profit growth rate, 1973-92**

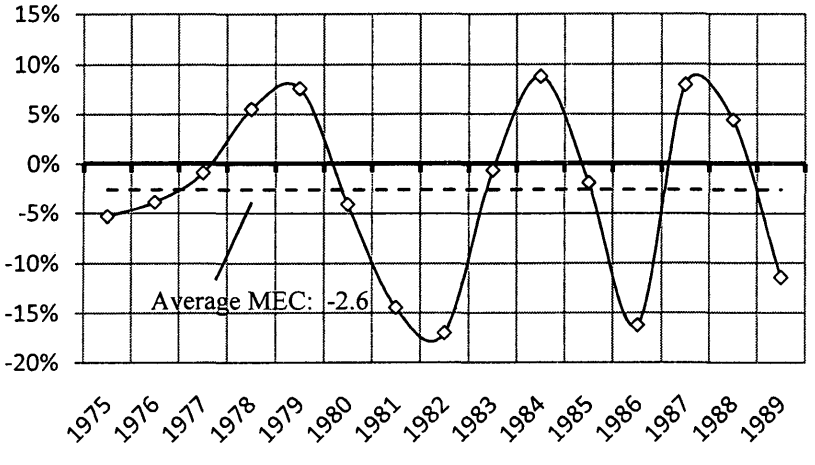



Source: CANSIM Table 380-0016

As the theory suggests, eventually a falling rate of profit will usher in a stagnating mass of profit. The above graph demonstrates that the growth rate of the mass of profit trended downward throughout the period. The peak of each business cycle is significantly lower than the one preceding it. Although the growth of the mass of profit began to slow down in the 1970s, it did not reach destabilising levels until the 1980s. At this point, the business cycles combined with overaccumulation to produce long and deep crises. The depth of the 1982 crisis can be partly attributed to the high interest rates of the period. The rate of profit of enterprise is the average rate of profit minus the interest

rate. In 1981, the rate of profit of enterprise was -3.1 percent, while the average rate of profit was 12.5 percent. A larger share of profit was distributed to the credit intermediaries and the banks at the expense of individual enterprises, thereby facilitating bankruptcy and unemployment. High interest rates were part of the government's anti-inflationary strategy at the time, but also reflect the normal mechanisms of capitalist accumulation.[184] A confluence of factors combined in 1990 to produce the deepest crisis since the Great Depression of the thirties.[185] At that point in time, the business cycle combined with the downward trend in the mass of profit to produce a deep and long crisis. We will return to the 1990-92crisis in greater detail further below.

**Figure 12. MEC, 1975-89**




Source: CANSIM Tables 031-0002, 380-0016 and 176-0043

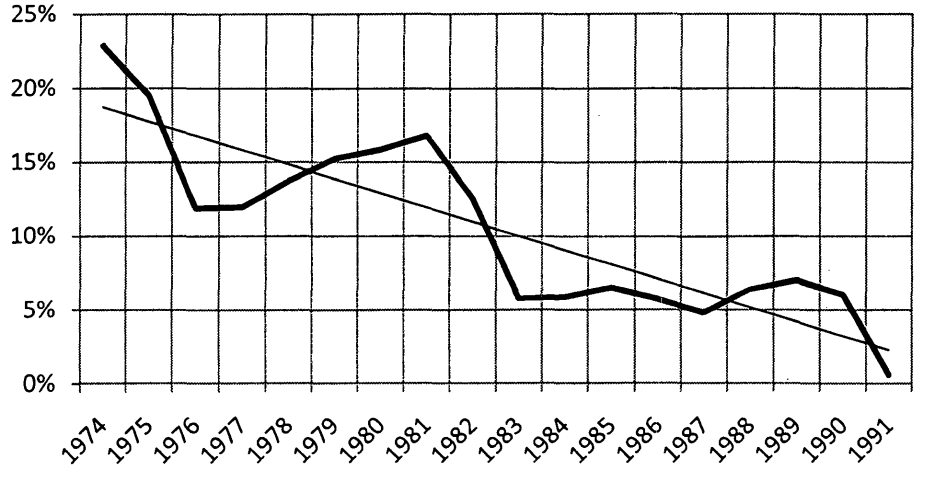
The declining growth rate of the mass of profit coincided with a marginal efficiency of capital (minus the interest rate) at critically low levels throughout this

[184]Norrie *et al.*, *A History of the Canadian Economy*, 405. In Chapter 5, I will demonstrate how the dynamics of accumulation – not institutional arrangements – ultimately govern the relationship between banks and firms.

[185] Norrie *et al.*, *A History of the Canadian Economy*, 405

period. In fact, the average MEC throughout this period (indicated by the broken line in Figure 12 above) was -2.6 percent. If we compare this with its average level in the period 1993-2008, the difference is astonishing. In the latter period, the MEC averaged 13.6 percent. In other words, the average *difference* between the 1993-2008 and 1975-1989 was an incredible 16.2 percentage points. That is to say that if capitalists invested in the period 1993-2008, they could expect a return of 13.6 percent on their latest investments on average. Likewise, in the period 1975-1989, investing in additional capital equipment was a very risky undertaking. We will examine trends in the MEC in more detail in Chapter 3. For now, it is sufficient to point out that accumulation through this period was fragile to say the least. Moreover, as a result of these problems of profitability, the rate of capital accumulation slowed throughout the period.

**Figure 13. Rate of accumulation slows, 1974-91**




Source: See Appendix

As we have seen, the rate of accumulation is a function of the mass of profit and the MEC. This is an important observation, and the coincidence of the patterns is more

meaningful than that between the rate of profit and the rate of accumulation, as opposed to what many Marxists suggest (e.g. Kliman). In the latter case, the denominator is often the same in both the measure for the rate of profit and for the rate of accumulation (either gross capital stock or net capital stock) and therefore produces a similar pattern for that very reason. Using the *growth rate* of the mass of profit – and more specifically the MEC – gets us closer to the processes governing accumulation and crisis.When the mass of profit growth rate begins to slow along with the MEC, accumulation mustslow down (and, of course, once the mass of profit stagnates or shrinks, the paucity of investment funds and zero or negative profitability on the latest investments will cause business investment to stop altogether, the absolute point of overaccumulation). We have seen that the growth rate of the mass of profit slowed in this period and that the MEC was critically low. Predictably, this is reflected in a declining rate of accumulation. I demonstrated how the rate of accumulation is an "equilibrium mechanism" in capitalism. When accumulation runs into trouble, the latent disequilibrium between production and consumption in capitalism manifests itself in greater instability. This is precisely the character of the period in question.[186]

**Political implications**

Before examining the crisis of 1990-92, it is worth noting the political implications of the above analysis. Using Marxist measures, we see that declining profitability was not due to a long-run wage-push profit squeeze, nor was it due to a

[186] Norrie *et al.*, *A History of the Canadian Economy*, 401

decline in the production of surplus-value.[187] Implied in these latter theories of crisis is a politics of class equilibrium, according to which an institutional framework can be established in which workers are neither too strong nor too weak. According to this view, weak workers' wages are too low to purchase the commodities produced, which leads to a crisis of underconsumption. On the other hand, strong workers are unproductive and their wages are too high. This state of affairs reduces profitability and causes the economy to stagnate. From this perspective, crises can be avoided by institutionalising the right balance of class power. The analysis above demonstrates that the theory behind this politics is patently false. The "productivity" of workers – insofar as the relevant measure of productivity is the production of surplus-value – was high throughout the period. The economy began to run into trouble in 1974, but the rate of surplus-value did not decline. Clearly, the production of surplus-value by employed production workers was not a problem. Instead, I have shown that it was capitalist accumulation itself that begot stagnation. A rising organic composition of capital was the principal cause of the falling rate of profit, the shrinking growth rate of the mass of profit and the low-level MEC in this period. In other words, slowing growth occurred relatively independently of distribution in the long-run. The wage-push profit squeeze theorists only account for declining profitability, investment and stagnation in distributional terms (i.e. the class struggle over the distribution of wealth). They do not theorize it as a system-wide decline in the *production* of surplus-value – of surplus-value relative to constant

[187] For theories of declining profitability/productivity that rely on the power relations between the classes, see e.g. Philip Armstrong, Andrew Glyn, and John Harrison, *Capitalism Since 1945*. (Oxford: Basil Blackwell, 1991); Samuel Bowles, David M. Gordon, and Thomas E. Weisskopf, *After the Wasteland: Democratic Economics for the Year 2000* (London: Sharpe, 1990).

capital – only as a relative decline in wealth for this or that class. Yet the empirical evidence suggests that there was just such a system-wide decline in surplus-value. The distributive struggle was only secondary to this. This will be examined in more detail below. The political upshot of my analysis is that "the crisis is an economic expression of the exploitative capital-labour relations" built into the very heart of the capitalist accumulation itself.[188]

In the next section, I will examine the 1990-92 crisis (in Chapter 3, I will explain how the subsequent depression ushered in one of the longest periods of stable accumulation in Canadian history, 1993-2008). I will demonstrate that the crisis of 1990-92 was a necessary consequence of capitalist accumulation itself; not the fault of the banks, short-sighted regulators or irresponsible speculators. The political upshot of this analysis is that there are only so many ways capitalist accumulation can get back on track after a crisis of absolute overaccumulation, and these always have negative repercussions for workers. *The terms of the recovery are simultaneously challenges to labour.* In other words, periods of crisis and recovery are periods of heightened class struggle, because the import of the distributional struggle for continued accumulation grows. For this reason, there are many lessons to be learned from the crisis of 1990-92 that are relevant for ongoing struggles in the world economy today.[189] Let us now turn to our analysis of the 1990-92 recession and subsequent slump.

**The Great Canadian Slump**

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[188] Paul Mattick, *Marx and Keynes: The Limits of the Mixed Economy* (London: Merlin Press, 1980): 72.
[189] For more on the world economy, see David McNally, *Global Slump: The Economics and Politics of Crisis and Resistance.* (Black Point: Fernwood, 2011).

Following seven years of robust economic growth,[190] the Canadian economy entered into a protracted period of financial and industrial turmoil in the spring of 1990.[191] After months of deflection, the federal government finally acknowledged in the autumn that "sustainable growth can't go on forever."[192] Minister of Finance, Michael Wilson, reassured the public that he did "not expect this to be a severe recession."[193] Others were less optimistic, but surely more realistic. "The party's over," confessed CIBC senior economist, John Clinkard.[194]

The OECD called the downturn "unusual," for it preceded the dip in the U.S. by six months.[195] Previous business cycles had been synchronous. For this reason, it was eventually dubbed a "made-in-Canada recession."[196] It was also deeper and longer than the recession in the U.S. and other major trading partners.[197] While the downturn lasted only eight months in the U.S., it persisted for twenty-seven months in Canada. In fact, it was the longest economic decline in postwar history. In its 1992 economic survey, the OECD noted that "while in all previous business cycles since the 1950s output had returned to its pre-recession level within three quarters, in early 1992 real GDP was still

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[190] Output grew by 4.5 percent in 1988. See CANSIM Table 379-0023.
[191] Robert Kozak, "Canada's Recession Deepens as Economy Shrinks." *Reuters*, Feb. 28, 1991.
[192] Kenneth Kidd, "Jelinek Says Canada in a 'Slowdown' Agrees with Conference Board's Gloomy Forecast, but Refuses to Call It a Recession." *The Globe and Mail*, Oct. 12 1990.
[193] "Canada Announces Recession Is Official." *Chicago Tribune*, Nov. 15 1990.
[194] Fred Langan, "Canadian Bank Anticipates Long, Tough Recession." *The Christian Science Monitor*, 26 December 1990.
[195] "Canada Announces Recession Is Official." *Chicago Tribune*, Nov. 15 1990; "The Recession and Expected Recovery." OECD Publications and Information Centre, 1991, p. 11 and 33; Warren Potter, "Let's Call It as It Is: A Recession." Toronto Star, Oct. 27 1990.
[196] Brian Milner, "Canada in Its First Home-Made Recession Conference Board Stops 'Equivocating,' Changes Its Views." *The Globe and Mail*, Oct. 11 1990.
[197] OECD, *OECDEconomic Surveys, Canada.* OECD Publications and Information Centre, 1991, 35-6.

about 2 per cent below the peak registered in early 1990."[198] By the end of 1991, TD Bank Chief Economist, Douglas Peters, pronounced that "we've almost put the economy in a pine box."[199] And by the beginning of 1996, cumulative output losses surpassed $400 billion and continued to grow "at an annual rate of $75 billion."[200]

The "made-in-Canada recession" soon became known as "the worst slump since the Great Depression."[201] Employment and output losses resulting from the slump exceeded "everything we have known since the Great Depression of the 1930s."[202] Job losses grew at three times the pace of those in the United States, and by 1993 the official unemployment rate reached 12.5 percent.[203] By 1996 cumulative employment losses in Canada amounted to "30 per cent of the corresponding losses of the 1930s" and double those from 1982 to 1986.[204] Moreover, there was little sign of the storm letting up.[205] Instructively, the employment-to-population ratio would not recover to pre-crisis levels until the new millennium. Indeed, the "jobless recovery" after 1993 prompted Canadian Labour Congress President, Ken Georgetti, to name the 1990s "the worst decade for

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[198] OECD, *OECDEconomic Surveys, Canada.* OECD Publications and Information Centre, 1992, 11.
[199] Mary Williams Walsh, "Canada's Recession Deepens Slump Is Worse Than in U.S." *Los Angeles Times*, Dec. 29 1991.
[200] Pierre Fortin, "The Great Canadian Slump." *The Canadian Journal of Economics* 29, no. 4 (1996): 783.
[201] Walsh, "Canada's Recession Deepens Slump."
[202] Fortin, "The Great Canadian Slump," 761.
[203] John Urquhart, "Canada's Recession Is Getting Worse, New Reports Show." *The Wall Street Journal*, Feb. 11 1991; and CANSIM Table 2820085.
[204] Timothy Lewis, *In the Long Run We're All Dead: The Canadian Turn to Fiscal Restraint.* (Vancouver: UBC Press, 2003), 147.
[205] Fortin, "The Great Canadian Slump." 783.

Canadians in our history."[206] In economics circles, the 1990s are now known as the years of the Great Canadian Slump.[207]

In this chapter, I use the theoretical framework developed by Henryk Grossman (1929) to account for the slump. From a classical standpoint, I argue that the slump in Canada was the result of overaccumulation. For this reason, it was deeper and longer than the downturn in the U.S. In the first section, I compare and contrast some key economic indicators for the 1990-92 recession in the U.S. and Canada. In the second section, I critically examine mainstream explanations for the crisis. In the third section, I outline an alternative theorisation with reference to relevant empirical data. Finally, I conclude by highlighting the importance of this type of analysis for understanding current global economic turmoil.

**Anatomy of the 1990-92 recession**

As I noted in the introduction to this chapter, the crises in the U.S. and Canada were significantly different, both in terms of magnitude and duration. As Figure 14demonstrates, real output loss in the U.S. was miniscule compared to that in Canada. It is worth taking note that real GDP growth in Canada began shrinking in the third quarter of 1989, well before the crisis erupted in the spring of 1990, and that it did not return to its pre-recession levels until 1994, almost four years later. The Bank of Canada was well aware that a slowdown was forthcoming when it formulated its controversial monetary policy at that time. We will return to this fact later.

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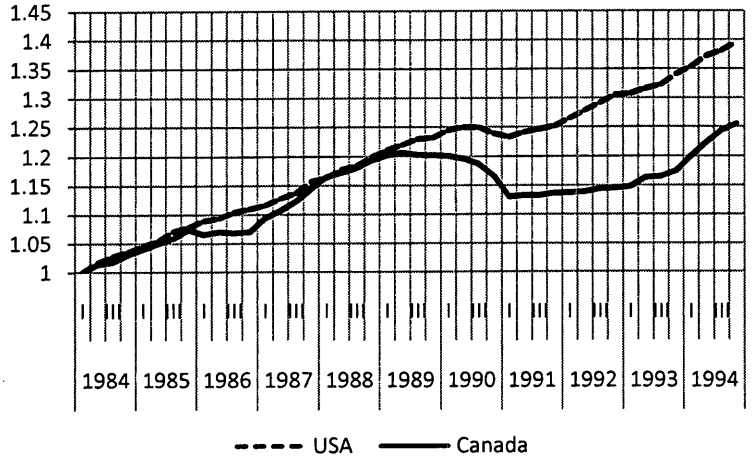
[206]Norman Caulfield, *NAFTA and Labor in North America.*(Chicago: University of Illinois Press, 2010), 133.
[207]Fortin "The Great Canadian Slump."

**Figure 14. Real GDP indices (1984 Q1 = 1)**




Source: CANSIM Tables 380-0001, 326-0020 and BEA NIPA Table 1.1.3

The contraction of output was led "by a decline in final domestic demand,"[208] which was "focused most sharply on business investment."[209] In other words, the dynamics of the crisis must be sought in the domestic economy, and on the so-called supply side. In sectoral terms, manufacturing led the recession. Geographically, this means it was "felt most in Ontario,"[210] which was also the centre of capital accumulation in Canada before the crisis broke out.

The importance of Ontario to Canada's economy in this period cannot be overstated. The rate of investment measures gross investment over straight-line end-year net capital stock. In 1987, the year before the economy started to run into serious trouble, the rate of investment in Ontario led all the provinces at 13.26 percent.[211] Viewed from the standpoint of the rate of investment, the tiny province of Prince Edward Island was a

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[208]OECD, *OECD Economic Surveys Canada*, 1991, 15.
[209] Russell Blinch, "Canada in Recession with Two Quarters of Negative Growth." *Reuters*, Nov. 30 1990; and CANSIM Table 380-0002.
[210]OECD, *OECD Economic Surveys Canada*, 1991, 14.
[211]CANSIM Table 031-0002.

close second to Ontario. This highlights the importance of examining not just the rate of investment, but also the mass of investment dollars.

In Ontario, raw investment in dollars greatly exceeded all other provinces in this period. In 1987, Ontario businesses invested over $27 billion – almost double the volume of investment of the runner-up, Québec, at $14.6 billion.[212] These figures indisputably demonstrate that Ontario was the centre of capital accumulation in Canada before the 1990-92 crisis occurred. This fact will be important when we examine the effects of the exchange rate on accumulation further below.

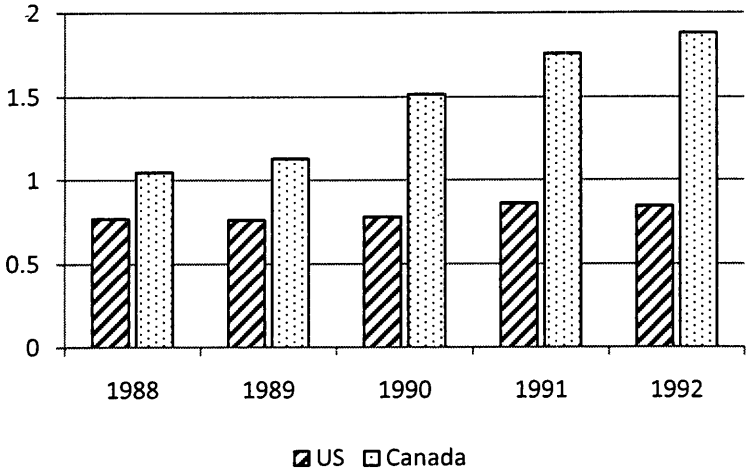
**Bankruptcies**

Bankruptcies are an important factor in any economic crisis. As profitability and the availability of credit declines, businesses have difficulty meeting their financial obligations. Generally speaking, more bankruptcies occur during deeper and longer recessions. The unavailability of profit and the high cost of credit mean that firms have greater difficulty staying afloat for longer periods of time. Figure 15 shows the business bankruptcy patterns in the U.S. and Canada during the course of the early 1990s recession. In the U.S., the number of bankruptcies remained below its 1987 level throughout the early 1990s. In Canada, on the other hand, the number of bankruptcies rose throughout the early 1990s. In this country, the number of bankruptcies in 1992 was 88 percentage points higher than the number in 1987. These divergent patterns point to the unique character of the slump in Canada. They also demonstrate that the Canadian

[212]CANSIM Table 031-0002.

economy started to run into trouble well before the outbreak of recession in the spring of 1990, as we have seen in the real GDP figures above.

**Figure 15. Bankruptcy indices (1987=1)**




Source: CANSIM Table 177-0004 and ABI Quarterly Business Filings[213]

**Financial institution failure**

Crises also issue in financial institution failures. As firms and workers file for bankruptcy, banks and other credit intermediaries lose important assets. Due to high levels of leveraging (banks in Canada are leveraged about twenty times), the result is often insolvency.

It is notable that the majority of Canadian financial institution failures occurred in boththe 1980s andthe 1990s. In the U.S., on the other hand, the bulk occurred in the 1980s, while failures declined substantially throughout the early 1990s. This highlights the fact that the crisis of the early 1990s was worse in Canada than in the U.S. By the end

[213] American Bankruptcy Institute, "Quarterly Business Filings by Year (1980-1993)." Accessed August 20, 2012. http://www.abiworld.org/AM/Template.cfm?Section=Home&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=59253.

of the early 1990s, the wave of financial institution failures in the U.S. had more or less subsided. In Canada, on the other hand, it continued into the mid-1990s.[214] Significantly, the two largest financial institution failures in Canadian history occurred in 1991 and 1992, during the worst of the recession. In April 1991, Standard Trust filed for bankruptcy. The following year, Central Guaranty Trust Co. collapsed, and the size of the subsequent rescue was the largest in Canadian history.[215]

**Unemployment**

As firms file for bankruptcy, close up shop, restructure or lay off workers, unemployment, too, increases during the course of a recession. Employment patterns were significantly different in the U.S. and Canada throughout the 1990s. The employment-to-population indices in Figure 16below measure the ratio of persons employed to persons of working age. The early 1990s crisis barely made a dent in this ratio in the U.S. In Canada, on the other hand, this ratio slumped significantly and did not regain its pre-crisis level until the new millennium.

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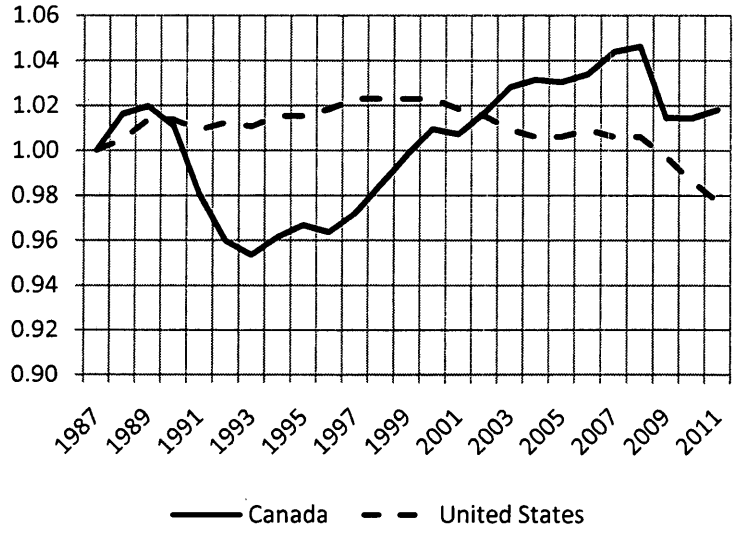
[214] FDIC Table BF02 and CDIC History of Member Institution Failures

[215] Pierre L. Siklos, *Money, Banking & Financial Institutions: Canada in the Global Environment.* Fifth ed. (Toronto: McGraw-Hill Ryerson, 2006), 317.

**Figure 16. Employment-to-population indices**




Source: CANSIM Tables 282-0001, 282-0009 and BLS Table A-1

The employment-to-population ratio captures changes in population. However, if we look at the raw number of jobs lost and the time it took to recoup those losses, the story is equally troubling. The number of jobs lost in the 1990-92 crisis and ensuing slump were not recovered until 1998.[216] These facts fit the textbook definition of a depression, in which a "downturn in the business cycle" is accompanied by "sustained high unemployment" lasting for years.[217]

To sum up, the crisis of 1990-92 resulted in a depression. Real GDP would not recover until 1994, and employment would not recover until the new millennium.[218] Financial instability rocked the country, as financial institutions imploded and bankruptcies spread like wildfire. Importantly, the crisis was principally endogenous to Canada (we shall see below in which particular ways this was so). It began in the

[216] CANSIM Table 282-0001
[217] *The Economist Dictionary of Economics*. Fourth ed. (New Jersey: Bloomberg Press, 2003), 95.
[218] Employment here signifies the employment-to-population ratio.

manufacturing sector in Ontario, the centre of capital accumulation in Canada. Finally, and most significantly for the purposes of the following analysis, *the crisis was driven by declining business investment*. The significance of this fact will become apparent in the classical analysis of the slump to follow.

After having reviewed some of the characteristics of the early 1990s recession in the U.S. and Canada, we will now turn our attention to the explanations that have emerged for the Great Canadian Slump.

**Explanations for the slump**

There are two clusters of explanations for the Great Canadian Slump. The first cluster of explanations emphasises government inflation control and the high interest rates that accompanied it as the principal cause for the crisis. For instance, in the mainstream media, high interest rates stemming from central bank policy were seen as the principal "villain of the recession."[219] *The Toronto Star* ran a piece in September 1990 entitled "Canada winning inflation war, but paying big price," noting that "Canadian manufacturing has borne the brunt of these extremely destructive high interest rate-exchange rate policies," a point we shall return to later.[220]

In the parliamentary realm, New Democratic Party finance critic, Steven Langdon, asked whether Finance Minister, Michael Wilson, would "admit it is a made-in-Canada recession, that he is responsible and what he intends to do about it?"[221] And

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[219] Deborah Dowling, "This Recession Could Well Be Deeper Than Predicted." *Kitchener-Waterloo Record*, Feb. 18 1991.
[220] Arthur Donner, "Canada Winning Inflation War, but Paying Big Price." *The Toronto Star*, 10 September 1990.
[221] "Wilson Refuses to Call Slump a 'Recession.'" *Kitchener-Waterloo Record*, Oct. 11, 1990.

Liberal Party industry critic, Jim Peterson, fumed that "the government's incompetence and mismanagement have wrung our economy dry."[222]

This view was upheld amongst private research firms as well. Michael McCracken, president of the Canadian economic research firm, Informetrica, noted that the policy makers had "finally broken the backs of consumers and businesses," placing the blame for the recession squarely on the shoulders of the Bank of Canada and its interest rate policy.[223] The Conference Board of Canada's Chief Economist, James Frank, reinforced this view, explaining that monetary policy "was too tight too long."[224]

Similarly, president of the Canadian Economics Association, Pierre Fortin, wrote a piece in which he identified the Bank of Canada as the key culprit behind the recession. According to Fortin, the principal cause of the slump was a decline in domestic demand resulting from "monetary contraction and ... induced fiscal contraction." He argued that "the public finance crisis of the 1990s is ... a product of the monetary contraction and the economic crisis." Higher interest rates led to higher debt-servicing costs and the recession itself led to lower tax revenues. The resulting fiscal retrenchment alongside high interest rates further depressed output and employment.[225] These policies were the result of the unaccountability of central bank policy makers. To be sure, according to Fortin, the structural inadequacies of the Bank of Canada cocoon central bankers in "an anti-

[222]KonradYakabuski, "Recession Now Certain, Fresh Data Tell Analysts." *The Toronto Star*, 1 September 1990.
[223]Yakabuski, "Recession Now Certain."
[224] Milner, "Canada in Its First Home-Made Recession."
[225]Fortin, "The Great Canadian Slump." 762-773.

inflationary temple" with too little accountability to the public. Fortin concluded that "the Bank of Canada must be brought to reflect the preferences of the general public."[226]

A similar position is adopted by economic historian, Timothy Lewis. For him, the Bank of Canada's high interest rates "caused all manner of fiscal problems in 1989, and were the cause of the shocking depth of the 1990-1 recession." To be sure, "monetary policy is the only reasonable explanation for the depth and timing of the recession in Canada."[227] High interest rates were the cause of the recession, and the central bank was the malefactor.

Canadian Auto Workers economist, Jim Stanford, holds a similar view. In his book *Paper Boom*, he writes that "interest rates, both short-run and long-run, are clearly an outcome of *deliberate policy*, not a result of the operation of a free market for loanable funds."[228] He writes that "largely thanks to this extreme policy course, Canada experienced uniquely high interest rates between 1989 and 1992, and suffered a recession that was far worse than those experienced by its trading partners."[229]From this standpoint, the Central Bank interest rate hike in the early1990s was akin to the 1979 "Volcker shock" in the U.S.

A second cluster of arguments maintains that high interest rates and the ensuing recession were the result of a combination of central bank policy and factors outside of its control, laying particular emphasis on the latter. For instance, the OECD notes that "the causes of the recession can be traced back to the emergence of intense pressure on

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[226]Ibid., 781.
[227] Lewis, *In the long run*, 132-134.
[228]Jim Stanford, *Paper Boom: Why Real Prosperity Requires a New Approach to Canada's Economy*. (Ottawa: Canadian Centre for Policy Alternatives, 1999), 211 (emphasis added).
[229]Ibid., 195-96.

resources in the late 1980s, evidenced by the growth of domestic demand persistently in excess of output growth." Product and labour market slack was absorbed by 1988, and "the resulting inflationary pressures were seen by the authorities as a threat to satisfactory medium-term performance of the economy." As a result, policies "were geared towards curbing excess demand." Monetary policy caused a "severe tightening of monetary conditions" and the resulting "rapidly deteriorating corporate and household financial positions looked unsustainable and business and consumer confidence fell."[230] Other factors contributing to high interest rates at the time include "the constitutional debate" and "the exchange rate and future inflation performance."[231]

Laidler and Robson of the conservative C.D. Howe Institute attribute the recession in 1990-92 to the legacies of previous decades, including a deteriorating fiscal situation, a slowdown in productivity growth (which began in the 1970s), and the signing and inauguration of the Canada-U.S. Free Trade Agreement (CUFTA), whose adjustment costs contributed to a period of slower growth. Nevertheless, and like all accounts thus far, "the single most important influence" on the economy in the early 1990s was monetary policy, which became "seriously contractionary" at the beginning of 1990.[232]

Freedman and MacKlem of the Bank of Canada argue that unusually high interest rates in Canada at that time reflected a "risk premium" resulting from rising levels of government debt and political uncertainty.[233] In particular, the interest rate premium rose

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[230] OECD, *OECD Economic Surveys, Canada* 1990-1, 12-13
[231] OECD, *OECD Economic Surveys, Canada*, 1992, 11.
[232]David E.W. Laidler and William B.P. Robson.*Two Percent Target: Canadian Monetary Policy since 1991*. Toronto: C.D. Howe Institute, 2004, 10-12.
[233]Charles Freedman and Tiff Macklem."A Comment on 'the Great Canadian Slump.'"*The Canadian Journal of Economics* 31, no. 3 (1998): 646-65.

in Canada because of rising domestic and international debts and structural deficits. "The debt build-up in the 1980s and 1990s was" a structural problem, resulting in high interest rates.[234] According to the authors, ascribing unusually high interest rates in Canada to monetary policy is "an overstatement."[235] We will return to the question of debt and deficit further below.

In each of the arguments above, high interest rates, whether the result of ideologically-driven policy, pure and simple, or a more complex interaction of processes, were the main cause of the recession. Indeed, "the fact that Canadian interest rates were too high for too long is universally acknowledged."[236] There are, however, some problems with the above accounts.

First, the interest-rate explanation for the crisis cannot account for both the depth and persistence of the slump. Indeed, despite substantial easing of monetary conditions in 1991-92 the economy remained in dire straits.[237] In fact, from May 1990 to February 1991 short-term interest rates fell by over 3.5 percent, but the economy had "little response" to these changes.[238] Likewise, between 1990 and 1992 long-term rates fell substantially, remaining well below their 1980s levels, but there were no signs of improved economic performance.[239]

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[234]Ibid., 662.
[235]Ibid., 651.
[236]Fortin, Pierre. "Interest Rates, Unemployment and Inflation: The Canadian Experience in the 1990s." *The Review of Economic Performance and Social Progress* 1, June (2001): 118.
[237] OECD, *OECD Economic Survey, Canada,* 1992, 11.
[238]Urquhart, "Canada's Recession Is Getting Worse"; Blinch, "Canada in Recession with Two Quarters of Negative Growth."
[239]CANSIM Table 176-0041.

Second, these explanations do not account for the long-run rise in real interest rates that began much earlier, in the mid-1970s. Certainly this secular rise had something to do with the way the crisis in 1990-92 unfolded. In other words, these explanations do not relate the *long-run patterns of economic development* in Canada to the early 1990s crisis. A more theoretically convincing argument can be made for the 1990-92 recession and subsequent slump by examining how the long-run patterns of development relate to the dynamics of crisis in 1990-92 and the subsequent slump.

Finally, Stanford *et al.* attribute too much power to the central bank in the determination of interest rates. Central bank policy is an important factor in interest rate determination, but not the principal factor. This will become clear in the analysis below. Instructively, policy makers were surprised at the extent to which the economy took a turn for the worse when they raised interest rates. Deputy Governor Freedman of the Bank of Canada notes that "although the consensus forecast at the time was for a soft landing of the economy, the downturn in 1990-91 was much deeper than had been *anticipated*, the rate of inflation came down much faster than *planned*, and the recovery was slower than *expected*."[240] This underlines the fact that the Bank of Canada does not exert as much control as Stanford *et al.* suggest. We must take other factors into consideration when examining interest rate movements. In so doing, we must avoid methodological eclecticism and empiricism. In other words, we must remain sensitive to

[240]Cited in Fortin 2001, (emphasis added).

the levels of analysis, always specifying the internal relations governing the dynamics of the crisis.[241]

We have thus far examined the characteristics of the recession in the U.S. and Canada. We have established that the crisis in Canada was much worse than that in the U.S., and that it was in fact for Canada the worst slump since the Great Depression (and remains so). We have examined existing explanations for the crisis, noting that each of these roots the crisis in high interest rates, either the result of Bank of Canada policy, pure and simple, or a combination of historically specific events and central bank policy. We have examined some of the weaknesses of these approaches. The purpose of the next section is to provide an alternative account of the 1990-92 recession. The account below integrates the long-run interest rate movements into a more convincing theoretical framework that is in keeping with the historical dynamics of capital accumulation in Canada. It will be shown that inflation in this period,interest rate movements andthe crisis itself can be explained by reference to movements in the rate and mass of profit.

**Theoretical interlude**

In the next section, I demonstrate concretely how the 1990-92 crisis of overaccumulation unfolded. First, however, a brief review of some of the notable features of Henryk Grossman's theory of "overaccumulation" or "failed valorisation" is required, as this forms the basis for the analysis to follow.

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[241] This approach is informed by Henryk Grossman's procedure of successive approximations (*Annährungsverfahren*). See Henryk Grossman, "The Change in Marx's Original Plan for Capital and Its Causes." Translated by Geoffrey McCormack.In *Economic Studies of Henryk Grossman*, edited by Rick Kuhn. Leiden: Brill, forthcoming.

First, in capitalism nothing is produced unless it can be produced at a profit. Grossman remarks that the capitalist process of production is "a labour process for the production of commodities ... and ... a valorisation process for obtaining ... profits. Only the latter process forms the essential driving force of capitalist production, whereas the production of use values is for the entrepreneur only a means to an end, a necessary evil."[242]Moreover, profit is both the endgame of production and the source of growth. Indeed, "expanded outlays on production, or accumulation, are only a function of ... the magnitude of profits."[243]

Second, in competition businesses are compelled to seek out ways to take market share from their competitors. The principal means of competition is the cheapening of commodities. For this reason, entrepreneurs are forced to find ways to cut costs. To this end, they must invest a portion of their profit into research and development, new technologies, the expansion of production and so on. The upshot is that capitalists must accumulate capital to stay competitive.

Third, because technological innovation in capitalism has a labour-saving bias, capital accumulation depends more and more on machinery and equipment. In other words, capitalist production displays "a tendency to replace human labour with machines."[244] Capital deepening increases with accumulation and, all other things being equal, this induces a declining rate of return on total investments.

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[242]Henryk Grossman, *The Law of Accumulation.* Translated by JairusBanaji.(London: Pluto Press, 1992), 61.
[243] Ibid.
[244] Rinehart, James W. *The Tyranny of Work.*(Toronto: Nelson, 2006), 154.

Fourth, the falling rate of return on total investments itself is not a sufficient cause for crisis. Grossman rightly points out that "breakdown" cannot be derived from this. "How could a percentage, a pure number such as the rate of profit produce the breakdown of a real system? ... An explanation is only possible when we relate the breakdown not to the rate of profit, but to its mass."[245] In fact, as the rate of profit falls, the mass of profit can continue to expand for a time. As long as this expansion occurs, accumulation will continue. In other words, accumulation depends upon a growing mass of profit. Once the mass of profit begins to stagnate or shrink, however, the rate of return on the marginal unit of capital turns zero or negative. To be sure, new investments are not producing any additional profit. At that point, entrepreneurs stop investing in new machinery and equipment.

Fifth, because it is no longer profitable to invest in new machinery and equipment, demand for fixed capital drops. Therefore, a crisis of overaccumulation first manifests itself as a realisation crisis in the economic sphere responsible for the production of capital equipment. Only later does it spread to the rest of the economy, especially to those sectors responsible for the provision of consumer goods and services. In this sense, it manifests itself simultaneously as a disproportionality crisis. In what follows, I demonstrate that our theoretical expectations are confirmed empirically in the course of events leading up to the 1990-92 slump.

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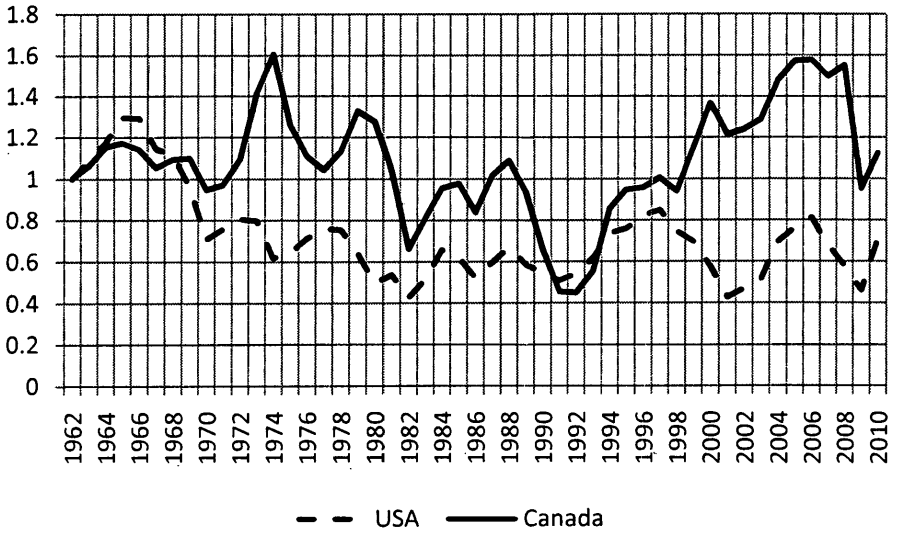
[245]Grossman, *The Law of Accumulation*, 102-3.

**Classical political economic explanation for the slump**

In this section, I demonstrate concretely how the 1990-92 crisis of overaccumulation unfolded. To this end, let us first turn to our fundamental indicators of economic stability and instability, comparing the rate and mass of profit in the U.S. and Canada.[246]Figure 11 shows indices for the rate of return on total investment in the U.S. and Canada from 1962 to 2010 (measuring corporate profits and interest payments over gross fixed capital stock of the previous year).

**Figure 17. Rate of return indices, 1962-2010**




Source: CANSIM Table 176-0043, 380-0020; BEA NIPA Table 1.14, 7.11 and FA Table 6.1

The rate of return fell from 1974 to 1992 in Canada. In the U.S., however, it fell from the mid-1960s until 1982 and then began to rise again until approximately 1997. This points to the fact that the rates of return in the U.S. and Canada have been following different paths. In other words, each of these economies has its own dynamics of

[246]Corporate profits and interest payments over gross fixed capital stock of the previous year.

accumulation and development, despite the close connection between them. Importantly, the long-run movements in the rate of return on total investment in Canada are strongly correlated to those of the capital-output ratio for the same period, just as the theory suggests. In other words, there is good reason to believe that the rising capital-output ratio from 1974 to 1992 underlay the falling rate of profit in this period.

As we have seen above, the rate of return on total investment does not drive accumulation directly. This is why it is important to examine the mass of profit as well. This point is worth dwelling on, as there is a popular "reflex" amongst many political economists to focus exclusively on the rate of profit.[247] As I have shown above, the mass of profit is the key determinant in *crisis formation*.[248] As the mass of profit stagnates or declines, the rate of return on the *latest* investments (i.e. the marginal unit of capital) turns zero or negative. At that point investment must stop, unless it can be prolonged by the provision of credit.

Figure 12 shows indices for corporate profits between 1987 and 1992. The mass of profit in the U.S. continued to grow throughout theyears 1990-92, whereas in Canada it began shrinking from the third quarter of 1988 until the first quarter of 1991. It then stagnated throughout 1991-92 period. Continued accumulation in Canada until the spring of 1990 was only possible because of the provision of credit. The perverse effects of credit expansion in the context of slowing growth will be examined below in the section dealing with inflation and the interest rate.

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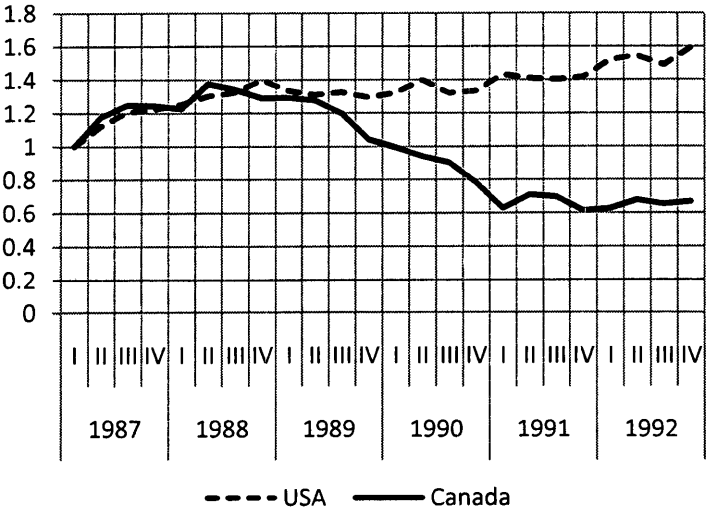
[247] For such an analysis, see e.g. Robert Brenner, *The Economics of Global Turbulence*. (New York: Verso, 2006).

[248] As I shall argue below, this does not mean the rate of profit is altogether irrelevant. For instance, the importance of the latter will become clear in our discussion of interest rate determination.

**Figure 18. Profit magnitude indices, 1987-1992**




Source: CANSIM Table 380-0005 and BEA Table 6.16C

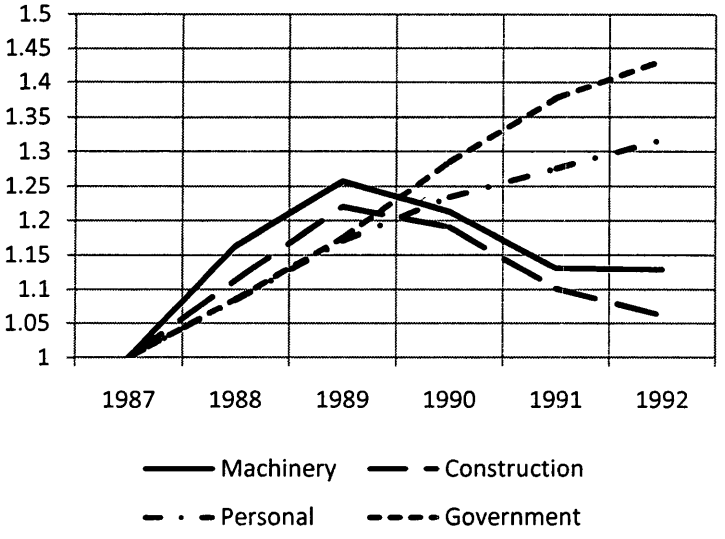
In the period leading up to the 1990-92 crisis, the centre of accumulation in Canada was Ontario, both in terms of the investment rate and the magnitude of dollars invested, as was demonstrated above. It was also the centre of overaccumulation. Investment slowed down first in manufacturing in Ontario. In the first instance, this was the result of a shrinking mass of profit (secondary influences – e.g. the exchange rate – will be examined below). In the country as a whole, the mass of profit began to shrink in 1988.[249] Consistent with the theory discussed above, investment growth slowed substantially from 8 percent in 1988 to 1.5 percent in 1989.[250]

The slowdown began first in the manufacture of machinery before spreading to the rest of the manufacturing sector and, subsequently, the rest of the economy. This was

[249] Importantly, accumulation between 1986 and 1988 was *highly intensive*. In other words, investment in labour-saving technology was greater in this period than investment in expanding production at a given technological level.
[250]CANSIM Table 031-0002.

a result of declining investment in (and therefore demand for) fixed capital after the rate of return on the marginal unit of capital turned negative. To be more precise, in Ontario between 1988 and 1989, value added stagnated or declined in fuel, primary metals, machinery, chemical products and non-metallic products industries due to a decline in demand for capital equipment, semi-finished goods and raw materials. All other manufacturing industry value added began declining after 1989 for the same reason.[251] In other words, stagnation and decline occurred first in the production of fixed and circulating capital before spreading to the production of consumer goods. This pattern is consistent with the theory of overaccumulation discussed above.

**Figure 19. Final demand indices (1987=1)**




Source: CANSIM Table 381-0010

Figure 19 shows that demand for machinery began to slow down between 1988 and 1989 as the mass of profit began to shrink. It then began to shrink in 1990 along with

[251]CANSIM Table 301-0001.

the demand for construction services. The demand for personal as well as government goods and services, on the other hand, continued to grow in the initial phase of the slump. To be sure, this demonstrates that the crisis was not caused by a decline in consumer demand. It unambiguously began in the sphere of production responsible for capital equipment and only later spread to the sphere responsible for consumer goods. To repeat, declining *investment* in means of production was the primary factor slowing GDP growth during the recession. This is a classic case of overaccumulation in which capital accumulation – investment – cannot continue because both the means to invest and profitability in general have declined to such an extent that the rate of return on the latest investments has begun to stagnate or turn negative. The only way for this situation to persist until the spring of 1990 was by means of the credit system, a fact we shall return to below.

The order of events is important to our analysis. In the classical political economic framework, profits are both the incentive to and the means of investment. The mass of profit began to shrink in the third quarter of 1988. As a result, investment slowed and total output began to shrink a year later in the third quarter of 1989. Finally, after slowing down since 1988, aggregate wages in the economy as a whole began to shrink in the third quarter of 1990 as workers became redundant. The delay in wage adjustment and the concomitant wage pressure was an added – secondary – effect of overaccumulation that accentuated the crisis.[252] It should be noted that this order of events runs counter to the Keynesian idea that aggregate demand drives investment and

[252] CANSIM Table 380-0001 and CANSIM Table 326-0020.

growth. It reinforces the point that profit drives investmentand therefore growth. In other words, the limit to growth is not aggregate demand, it is profitability. The demand for consumer goods is necessarily of secondary importance, for employment (both private and public) itself depends upon investment. Hence, when we analyse the unwinding of the economy below and in particular the effect of reduced government expenditures on the economy, we will see that this is an important but secondaryinfluence on economic growth and contraction.

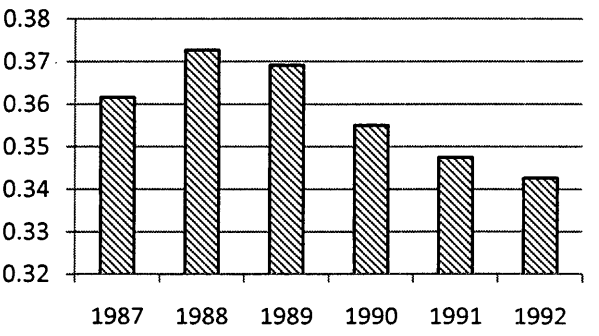
Until now, we have shown the importance of the mass of profit for sustained accumulation. We have demonstrated that the mass of profit began to shrink in 1988 and that slowing investment was the result. This accounts for the difference in the depth and duration of the slump in Canada relative to the recession in the U.S. The "made-in-Canada" slump was a result of a shrinking mass of profit. In the U.S., the mass of profit continued to grow throughout the period.

**Overaccumulation and wage movements**

In the context of overaccumulation wage pressures intensify. In a letter to a colleague in the U.S. dated June 21 1931, Henryk Grossman noted that as the capital-output ratio increases, a relatively increasing portion of profit must be used in order to sustain accumulation. Hence, the consumable portion of profit, the part intended for additional workers and for the consumption of the entrepreneurs themselves, becomes ever smaller, absolutely and relatively. If workers receive the previous portion, then not enough remains for the entrepreneurs, and vice versa. The necessaryresult of this objective situation is the intensification of wage pressures on accumulation – or

increasing competition over output.[253] This is the phenomenological foundation for the so-called "wage-push profit squeeze" doctrine, in which declining profitability is seen to be a result of a rising wage share of output. We can get at this dynamic empirically by examining the output-capital ratio for the historical moment in question.

**Figure 20. Output-capital ratio, 1987-92**




Source: CANSIM Table 031-0003 and 380-0017

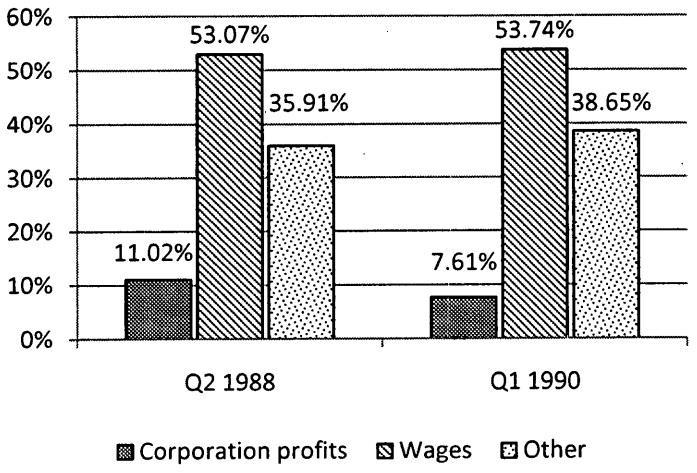
Figure 20demonstrates that the magnitude of output relative to capital stock began declining after 1988. In other words, the "pie" available for consumption and further accumulation got smaller, despite the addition of new capital equipment. In this context, wage pressures began to mount just before the crisis erupted. This is an important, secondary factor in *crisis formation.* If real wages are successfully reduced, it is possible for accumulation to continue. If workers successfully resist, accumulation will grind to a halt. In the period in question, the existing wage level increasingly got in the way of accumulation.

Keeping in mind that output began shrinking in the second quarter of 1989, Figure 21 below illustrates that the rising wage share of GDP was relatively insignificant in this

[253]Henryk Grossman, "Letter to Paul Mattick." June 21 1931. The competitive struggle betweenentrepreneurs intensifies in this context as well.

period. However, profits (before taxes) as a share of GDP declined substantially between the second quarter of 1988 and the first quarter of 1990. In the second quarter of 1988, profits as a share of GDP stood at 11.02 percent, whereas wages stood at 53.07 percent. In the first quarter of 1990, profits as a share of GDP had declined by 3.41 percentage points, whereas wages had only risen by 0.67 percentage points. In other words, and to repeat what was said above, profits declined absolutely *and relatively*. Therefore, the given wage level increasingly got in the way of further profit-driven growth because total output was shrinking. In this context, distributional stress over output intensified as entrepreneurs struggled to keep production going.

**Figure 21. Wages and profits as shares of GDP**




Source: CANSIM Table 380-0001

In a revealing analysis of labour cost advantage in Canada, economists at Woody Gundy Inc. reported that Canada's labour cost advantage declined dramatically (relative to the U.S.) from a double-digit advantage in the mid-1980s (e.g. 20 percent in 1986) to a 3.6 percent disadvantage in 1989. Importantly, labour costs are defined here as worker

compensation *per unit of real output*. If labour costs remain approximately the same and real output declines, the labour cost advantage decreases. In this situation, the solution for business is to increase output, reduce wages or both. In keeping with the theory, the report states that "at this point, Canadian businesses ... face the very unpleasant task of saying 'no' to rising compensation demands, indeed of finding a way to reduce compensation increases." The apparent culprit behind this "unpleasant" situation was declining output growth relative to wage growth.[254] In the context of declining total output resulting from the dynamics of accumulation as illustrated by Henryk Grossman, competition over output necessarily increases.

For business as a whole, the only apparent way out of this kind of situation is to reduce wage growth or to increase the rate of growth of output. Increasing the output growth rate requires investment. Therefore, short of the devaluation of capital, improved profitability and therefore increased incentive to invest that a series of bankruptcies would bring, businesses were left with only one option – to reduce wages. The unmediated effect of this process was for the competition over output to intensify, and this is precisely what happened in the period in question.[255] One writer for *The Globe and Mail* reported in no uncertain terms that "corporate profits must recover, *even at the expense of governments and working Canadians* ... Unless they do, no risks will be taken and no investments made in new plants or better equipment, or in the modernization of

[254] James Rusk, "Canadian Firms Losing Labor Cost Edge." *The Globe and Mail*, June 5 1990.
[255] Don McGillivray, "Only a Bigger Economic Pie Will Stop Us Fighting About Slice Sizes." *The Hamilton Spectator*, December 5 1991.

existing plants, or in future jobs."[256] To be sure, overaccumulation necessarily ushers in intensifying competition over output, and the only way to overcome the problem within the confines of profit-driven growth is by devaluing capital, reducing wages or both. The upshot is that wages persistently got in the way of continued capital accumulation in this period.

To this point we have examined the fundamental causes of the crisis and have identified the slowing and then shrinking mass of profit as the principal reason for the slump. We examined the intensification of competition over output as it relates to the fundamental dynamics of accumulation, and showed how wages got in the way of accumulation not through any inherent dynamic of their own, but because further accumulation required their reduction. In the next section, we will examine the general effects of these dynamics on state finances, and how the state's response compounded unemployment problems.

**Dynamics of accumulation and government debt**

Throughout the mid-1970s and early 1980s, secular economic decline and structural deficitswere not yet seen as such by policy makers. As a result, government officials continued to operate within the bounded Keynesian framework adopted in the Department of Reconstruction's 1945 White Paper. In particular, they sought to stimulate growth by tax reductions and fiscal deficits. As Timothy Lewis notes, "fiscal shortfalls would not have been nearly as severe without the combination of the deteriorating economy and the views that this deterioration was both temporary and at least partly

[256] Cook, Peter. "When the Big Need Is for Bigger Profits."*The Globe and Mail*, December 2 1991, emphasis added.

amenable to Keynesian fiscal remedy."[257] In the 1980s and 1990s, the government was becoming increasingly concerned about the escalating level of debt and its negative effect on interest rates and therefore growth.[258] Government expenditures consistently exceeded revenue throughout the 1980s and most of the 1990s. In 1981, for instance, for every dollar of revenue received, the government spent $1.03. By 1993, this number reached $1.20. The difference was being papered over by debt.

However, the problem of government debt consists of more than the difference between expenditures and revenues. The interest on debt must also be taken into consideration. The growth of government debt is a function of the debt stability condition. Mathematically, the debt stability condition can be expressed in the following way, where $\Delta D$ stands for the change in the debt burden,$D$ stands for existing debt burden, $ri$stands for the real interest rate, $rg$ stands for the real growth rate and $B$ stands for the operating balance.

$$\Delta D = D \cdot (ri - rg) + B$$

If the real interest rate is greater than the real economic growth rate, then the government debt burden will grow automatically, even if the government receives sufficient tax revenues to cover the cost of its operations.[259] The only way for government to put a break on the growth of debt in this circumstance is to create an

[257] Lewis, *In the long run*, 68.
[258]Ibid., 76.
[259]As we have seen above, real interest rates fundamentally reflect a paucity of loanable funds in relation to the mass of accumulated capital. Since profitability governs accumulation, rising real interest rates often accompany slowing real growth. In this way, government debt is fundamentally linked to the dynamics of accumulation.

operating surplus, either by cutting services or by increasing revenues. It can then use the surplus to pay down the debt burden.[260]

In the period in question, slowing accumulation and decelerating overall growth reducedthe growth rate of government revenues andcoincided with rising real interest rates, as we have seen above. Jim Stanford notes that the average real interest rate on federal debt between 1981 and 1997 was 7.5 percent, whereas the average growth of real GDP in the same period was 2.4 percent.[261] As a result, government transactions in liabilities grew secularly, and the growth rate of government income began to slow down. Likewise, government saving turned negative and remained so throughout the 1970s and 1980s. Lewis notes that from 1990 to 1996, net public debt in the U.S. rose by 48 percent of GDP from 38 percent in the 1980s. In Canada, on the other hand, it rose from 40 percent to 70 percent. The dramatic increase of the public debt to GDP ratio in Canada relative to the U.S. can be accounted for by slower economic growth and higher real interest rates.[262] As we have seen, slower growth and rising real interest rates are internally related to capital accumulation via movements in the rate and mass of profit. Therefore, state finances, too, are fundamentally related to the dynamics of capital accumulation.

To sum up, real interest rates were increasing, real growth was decreasing and the operating balance was negative. As a result of all this, government was taking on more debt. The situation was bad for government debt levels. Indeed, consistent with the

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[260]Stanford, *Paper boom*, 199-200.
[261]Ibid., 201.
[262] Lewis, *In the long run*, 147.

theory, interest on government debt grew throughout the 1980s and 1990s.[263] The only immediate way out of this situation for government was to achieve a positive operating balance by increasing revenues, decreasing expenditures, or some combination of the two. It is important to note that efforts to increase the operating balance were not merelythe result of ideology, nor were they merely a policy choice. To the contrary, from Ottawa's perspective, government expenditures had to be reduced because they were causing unsustainably high interest rates, due to a large risk premium on government bonds.[264] The only question was how this reduction of debt was to be achieved. This was a political question, dependent upon the particular historical constellation of relations at the time.

In 1984, with the election of the Brian Mulroney Conservatives, "neo-liberal ideology increasingly supplanted the embedded liberalism that supported postwar Keynesianism in Canada."[265] This followed years of bounded Keynesian fiscal policy under Pierre Trudeau, where in the context of economic stagnation "persistent rather than countercyclical deficits emerged."[266] The federal government made a concerted effort to eliminate the deficit in 1995, after concern about fiscal restraint emerged more generally in Canadian society.[267] But even in the early 1990s, state retrenchment compounded unemployment problems emerging from the 1990-92 crisis. To be sure, the particular

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[263]CANSIM Table 384-0004.
[264] Lewis, *In the long run,* 76.
[265]Ibid., 5.
[266]Lewis, *In the long run*, 3, 39.
[267] Ibid.,11. On p. 145 he notes: "Experiencing deep economic insecurity, people felt their economic situations to be precarious; people conceptualized the state, and particularly its welfare functions, as the problem; and people supported parties that promised to restore control over their economic lives by eliminating the deficit and retrenching the state."

strategy adopted by the government to eliminate the deficit was to raise taxes on consumers and reduce public expenditures.

Ottawa relieved pressure on the manufacturing sector by shifting the tax burden from capital onto consumers by means of the Goods and Service Tax (GST), which replaced the Manufacturers' Sales Tax (MST) on January 1, 1991. And the principal means by which expenditures were reduced was by cutting social programs.[268] In particular, this took the form of a freeze on Established Program Financing transfers (freezing transfers to finance provincial healthcare and post-secondary education) and a five percent cap on Canada Assistance Plan transfer growth to Ontario, Alberta and British Columbia (transfers for social assistance).[269] This compounded fiscal retrenchment already put in place in the 1989 budget and was particularly hard on working people.[270] In the winter of 1991-92, 2.5 million Canadians were dependent on government welfare spending.[271]

Later on, further retrenchment was reflected in a massive reduction of government employees. ArmineYalnizyan of the Canadian Centre for Policy Alternatives notes that "reduced operational spending became more widespread by 1992."[272] Lewis remarks that "from 1992 to 1999 Canada's total government sector ... experienced the most dramatic fiscal turnaround and the sharpest reduction in program spending in the G-7."[273] In fact,

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[268] Stanford, Jim. "The Economic and Social Consequences of Fiscal Retrenchment in Canada in the 1990s."*The Review of Ecnomic Performance and Social Progress* 1, June (2001): 141-60.
[269] Lewis, *In the long run*, 133-4.
[270]Ibid., 132.
[271] Peter Raymont, "Voices from the Shadows." National Film Board of Canada, 1992.
[272]ArmineYalnizyan, "Exposed: Revealing Truths About Canada's Recession." Ottawa: Canadian Centre for Policy Alternatives, April 2009, 14.
[273] Lewis, *In the long run*, 148.

between March 1993 and January 1997 (at approximately the time the budget was finally balanced), the number of government employees was reduced by a staggering eight percent (a reduction of 206,256 jobs). In the same years, payments of government wages and salaries were reduced by $439 million.[274] This retrenchment began under the Conservative Party's Brian Mulroney at the end of his term in 1993 and continued under the short tenure of Kim Campbell and the much longer tenure of Liberal Party leader, Jean Chrétien. Naturally, these measures "had the unavoidable side effect of prolonging the sluggishness of domestic spending and output," by reducing disposable income, both for government workers directly and for workers indirectly (by reducing non-cash transfers in the form of government services).[275] This is all to say that economic stagnation – measured in terms of unemployment – was prolonged by both government employment loss and the reduction of domestic demand resulting from fiscal retrenchment.

Fortunately for government policy makers, capital accumulation had already gotten restarted by 1993. As a result, real interest rates began to sink and real growth started to pick up in the same year.[276] As we have seen above, interest rates play an important role in determining government debt levels. We will see below how interest rate movements are fundamentally related to the dynamics of capital accumulation in Canada. The upshot is that the tendencies of decline started to go into reverse around 1993. In this context, and in combination with severe cuts to spending and significant

[274]CANSIM Table 183-0002.
[275] Pierre Fortin, "Interest Rates, Unemployment and Inflation: The Canadian Experience in the 1990s." *The Review of Economic Performance and Social Progress* 1, June (2001): 116.
[276]CANSIM Table 380-0022.

restructuring of social services, expenditures and revenues were balanced by 1997, well ahead of Finance Minister Paul Martin's 1995 deficit-reduction schedule.[277] Indeed, as Lewis notes, "it is no coincidence that with precipitous declines in interest rates budgetary balance was quickly achieved in the latter of half of the 1990s."[278] By 1999 there was a positive operating balance and much self-congratulation in government circles.[279]

Until now, we have examined movements in the rate and mass of profit. We have compared the characteristics of the 1990-92 crisis in the U.S. and Canada. After reviewing mainstream explanations for the crisis, I proposed an alternative classical political economic approach based on the work of Henryk Grossman. In particular, I identified a shrinking mass of profit as the principal reason for the depth and breadth of the crisis. We examined the role of competition over output and government fiscal policy in compounding the slump, and how each is internally related to the dynamics of accumulation. The analysis of the causes and character of the slump would be incomplete, however, without taking into account interest rate movements, as these were seen by most to be the primary cause of the crisis. In the next section, I will demonstrate that high interest rates were the *proximate* cause of the slump, but not the *principal* cause.

**Interest rate determination**

Henryk Grossman's *Annährungsverfahren*,or procedure of successive approximation, informs this work. This method reproduces "the concrete" in thought by

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[277]Stanford, "The Economic and Social Consequences," 153. Canada was the first G7 country to balance its budget in this period.
[278] Lewis, *In the long run*, 135.
[279]CANSIM Table 384-0004.

establishing definite levels of analysis and highlighting the internal relations connecting phenomena.[280] Like all concrete historical phenomena, interest rates are complexly determined. Analysis must avoid pursuing an eclectic and *ad hoc* approach when considering them. In what follows, I move from the abstract tendencies of capitalist development and their internal relation to interest rates to the concrete,historically contingent determinants of interest rates. In so doing, I also demonstrate the phenomenological foundation for the idea that the central bank interest rate policy stance was the principal reason for the crisis. In this sense, this section is in keeping with the analysis in this chapter so far, as it proceeded along these lines, from examining the movement of more abstract economic categories to analysing the concrete dynamics of accumulation and crisis as they affect business investment. With the above in mind, let us proceed to examine interest rate determination.

Here I summarise the relationships before examining each of the factors more closely and in greater detail in the sections to follow. In order of importance, and beginning at the most abstract level, the interest rate increase after 1988 reflects the long-run secular decline in the mass of profit relative to capital seeking it (i.e. increasing demand for investment funds) that began in the mid-1970s and, eventually, the steep increase in interest rates that a shrinking mass of profit in 1988 implies. At a lower level of abstraction, the rise in interest rates after 1988 reflects high inflation rates resulting

[280] This term was used by Paul Sweezy in his *Theory of Capitalist Development*. An essential difference between Sweezy's approach and Grossman's is that the latter develops the "internal relations" among the different "levels" of analysis. Sweezy was unclear about this. See Paul M. Sweezy, *The Theory of Capitalist Development: Principles of Marxian Political Economy*. (New York: Monthly Review Press, 1970), pp. 18-20. For a good explanation of the alternative view, see Ernest Mandel's Introduction to Karl Marx, *Capital*, Vol. 1 (New York: Penguin, 1976): 19-20.

from the provision of credit after the mass of profit began to shrink. This credit sustained accumulation until the outbreak of the crisis in the spring of 1990. At a still more concrete level, government debt, too, contributed to high interest rates. At the most concrete level, the interest rate increase reflects commodity price increases due to the Gulf War, a political risk premium resulting from constitutional turmoil at the time, and, finally, government anti-inflation policy. The high interest rate policy stance of the Bank of Canada was seen to be the reason for the recession, but the recession itself was already a long time in the works, and had more fundamental causes, as outlined earlier in this chapter. The central bank's interest rate hike took place in the context of generalisedeconomic instability. For this reason, the unexpected crisis that its policy induced was particularly deep and long. The increasing cost of borrowing alongside worsening conditions of profitability had a negative effect on business investment. High interest rates also stimulated an appreciation of the Canadian dollar and, as a result, export-based manufacturing in Ontario was especially adversely affected. Finally, Paul Mattick notes that crises of overaccumulation can manifest themselves in either sneaking stagnation or a sudden collapse.[281] A high rate of accumulation before the recession was sustained in part by credit. This explains the suddenness of the "breakdown" once the mass of profit began its descent and the central bank raised interest rates. These factors will be examined more closely below.

[281]Paul Mattick, *Marx and Keynes: The Limits of the Mixed Economy*. (London: Merlin Press, 1969): 84.

**Accumulation and the interest rate**

The classical approach employed in this chapter identifies the supply of and demand for loanable funds as the key determinant of the interest rate in the context of overaccumulation. To be sure, the endogeneity of money is central to this analysis. The quotation below summarises the approach succinctly.

> We have seen that although it is a category absolutely different from the commodity, interest-bearing capital becomes a commodity *sui generis* with interest as its price, and this price, just like the market price of an ordinary commodity, is fixed at any given time by demand and supply. The market rate of interest, though in constant flux, thus appears at any given moment as every bit as fixed and uniform as the momentary market price of any commodity. The money capitalists supply this commodity, and the functioning capitalists buy it; they constitute the demand for it.[282]

At the most abstract level, this section argues that the rising cost of borrowing throughout the 1970s, 1980s and early 1990s reflects the paucity of profit available for investment relative to the capital seeking valorisation. The rising rate of interest was the result of a squeeze on the supply of loanable funds. In the terms of classical political economy, too much capital was chasing too little profit in the form of interest-bearing capital. As a result, the costof borrowing increased. Following from this perspective, rising real interest rates throughout the 1970s and 1980s were a result of the declining rate of return on investments, and the "uniquely high interest rates between 1989 and 1992"[283] were fundamentally the result of an absolute decline in loanable funds, itself the effect of the shrinking mass of profit. The specific connections between falling profits and rising interest rates will be explored in greater detail below.

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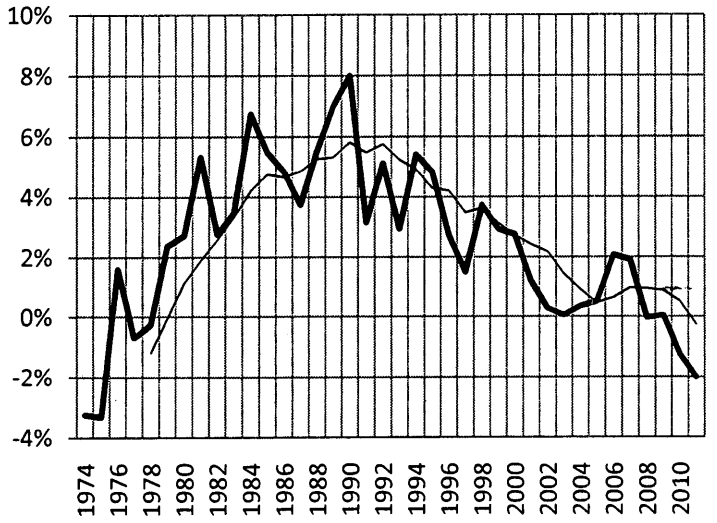
[282]Karl Marx, *Capital*, Volume 3. (New York: Penguin Books, 1991), 489.
[283]Stanford, *Paper boom*.

**Figure 22. Real interest rate for 3-month T-Bills**




Source: CANSIM Table 176-0043 and 326-0021

To repeat, the ratio of profits to capital stock, i.e. the rate of return on total investment, is a good proxy for the supply of and demand for loanable funds. The growth of the mass of capital in relation to the profit available to valorise it pushes up interest rates. When the mass of capital declines relative to profits, interest rates fall. In other words, the supply of and demand for loanable funds is, in the first instance, *internally* related to capitalist accumulation. It is not related to central bank policy in this fundamental sense. As we have seen above, the rate of return fell from 1974 to 1992. Accordingly, there was a secular rise in real interest rates in the same period (see Figure 22). This rise occurred *despite different policy regimes*, i.e. rising interest rates began *before the advent of "neoliberal" policy in Canada.*[284]This calls into question the idea

[284] The Bank of Canada switched from a "loose money" regime in the 1970s to a "tight money" regime in the early 1980s. The central bank began to set high interest rates "as early as 1988." See Fortin 2001, p. 118. This is around the same time John Crow made his 1988 Hanson lecture, in which he explicitly stated the bank's aim of monetary stability. See Paul Jenkins and Brian O'Reilly. "Monetary Policy and the

that "interest rates, both short-run and long-run" are "clearly" the result of "deliberate policy," and have nothing to do with the market for loanable funds, as CAW economist Jim Stanford maintains.[285] Indeed, the coincidence of a secular rise in interest rates and a decline in the rate of profit highlights the fact that interest rates are first and foremost *internally* related to the dynamics of capital accumulation, not merely the result of this or that central bank policy. To be sure, central bank policies influence interest rates only in a *secondary* way.

As is shown in Figure 23 below, the ratio of interest paid to corporate profits rose throughout the 1970s and 1980s as the rate of profit fell.[286] This long-run rise in interest payments was reversed only once accumulation got back on track after the 1990-92 recession and subsequent restructuring. To repeat, the falling rate of return was the principal factor raising interest rates (and interest payments)*throughoutthewhole period* leading to the 1990-92 crisis.

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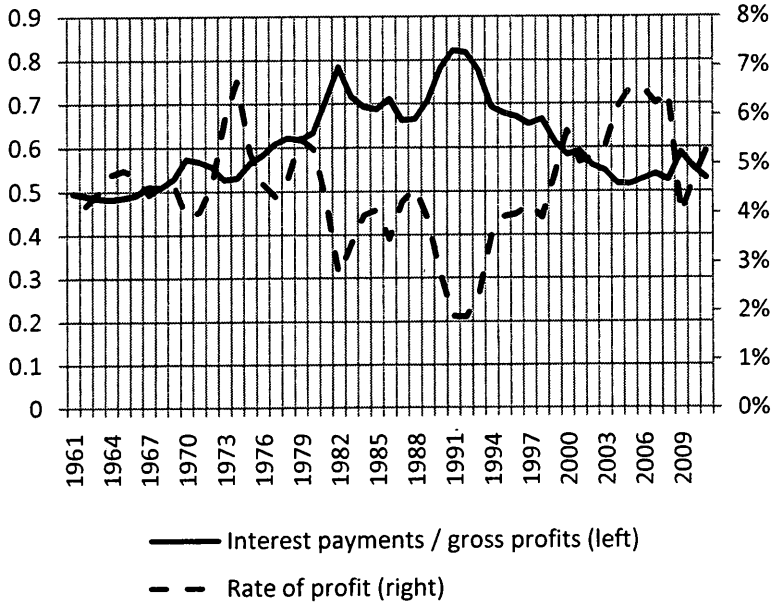
Economic Well-Being of Canadians."In *The Review of Economic Performance and Social Progress*, edited by Keith Banting, Andrew Sharpe and France St. Hilaire. 89-112. (Montréal: The Institute for Research on Public Policy (IRPP), 2001), 94.

[285]Stanford, *Paper boom*, 211.

[286]The rate of profit here is defined as corporate profits *after interest and dividends payments* (net profits) over gross capital stock from the previous year. I have chosen this ratio because it utilizes the quantity of funds immediately available to entrepreneurs after making required interest payments. The profits available to business enterprise *after* these payments are made will influence the demand for loanable funds.

**Figure 23. Rate of profit governs magnitude of interest payments, Canada, 1961-2011**




Source: CANSIM Table 380-0020 and 031-0003

Until now we have examined the relationship between the rate of profit and interest payments. The rate of profit fell from the 1970s until the early 1990s, but the mass of profit did not begin to grow negatively until the third quarter of 1988. As the mass of profit stagnates or shrinks, the demand for loanable funds increases further relative to their availability. As a result, the interest rate rises. From the second quarter of 1988 to the second quarter of 1990, the mass of profit shrank. Quarterly profits peaked in the second quarter of 1988 at $17 billion. In the first quarter of 1990 – just before the crisis broke out – profits stood at $12.3 billion. In other words, the mass of profit shrank by an incredible 27.6 percent in fewer than two years, well before the outbreak of the crisis in the spring of 1990. As I have shown above, firms began to increase their borrowing as a result. For this reason, the interest rate rose sharply. Short-term interest

rates peaked in May 1990 (e.g. treasury bills reached 13.88 percent). Once the recession hit, however, interest rates began a secular decline thanks to, first, the recession itself and the concomitant reduction of demand for loanable funds, and later, due to an increase of the ratio of profit in the form of loanable funds relative to the magnitude of capital seeking valorisation.[287]

On the one hand, already in 1989 business had slowed down investment substantially because the rate of return on the marginal unit of capital had turned negative. On the other hand, the tighter financial situation beginning in 1988 is reflected in a decline in cash on hand for most firms before the crisis broke out in the spring of 1990. In fact, between the third quarter of 1987 and the first of 1990, the period just before the outbreak of the crisis, cash on hand and demand deposits shrank by approximately 26 percent.[288] As the availability of profits contracted sharply –and so too cash on hand – credit sustained growth until the spring of 1990.[289]As Grossman notes, once the accumulation fund is in deficit, this is "initially covered by borrowings. This in turn reduces the total mass of available loan capital ... until ... the loan is completely exhausted." The crisis begins once there is no longer enough surplus value to continue accumulation, "even after borrowings."[290] In this case, this was reflected in a *sharp increase* in the real interest rate between 1988 and 1990. It is important to repeat,

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[287]CANSIM Table 176-0043.
[288]CANSIM Table 187-0005. Demand deposits are funds that can be withdrawn without any notice to the depository institution.
[289] We shall examine the empirical indicators for this below. The sharp decline in interest rates after 1990 Q2 was a result of the recession itself. Firms stopped investing, employment and output dropped and the demand for loanable funds decreased. In other words, rising interest rates contributed to the economic slump, but were not its fundamental cause.
[290]Grossman, *The Law of Accumulation*, 114.

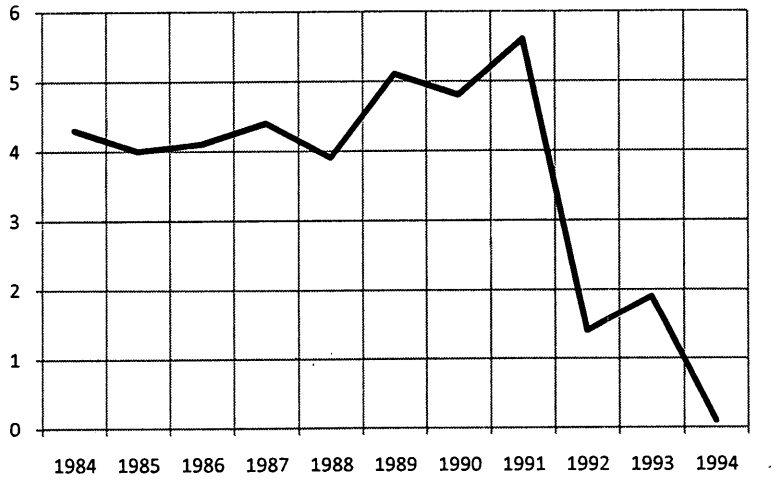
however, that accumulation became increasingly difficult throughout the entire period due to the falling ratio of profits to capital seeking valorisation. To sum up, the declining *rate* of profit and, eventually, a shrinking *mass* of profit were the principal (but not the only) factors behind rising interest rates in the period in question.

**Inflation and the interest rate**

The shrinking mass of profit affected interest rates further by issuing in inflation. Classical theories of inflation remain in a relatively underdeveloped state. Alfredo Saad-Filho notes that "the extra money approach can provide the basis for the systematic development" of a classical approach to inflation and "can incorporate, when this is warranted, some of the best insights of the other approaches."[291] The theory of inflation deployed in this work situates the particular occurrence of inflation between 1988 and 1990 in an increase in the quantity of money in circulation relative to value produced. In this section, I use this approach to demonstrate how the falling rate of return and shrinking mass of profit reduce the quantity of value in circulation relative to money, which is another way of signaling inflation.

[291] Alfredo Saad-Filho. "Inflation Theory: A Critical Literature Review and a New Research Agenda." *Value, Capitalist Dynamics and Money* 18 (2000): 345-346.

**Figure 24. Rate of inflation increases after 1988**

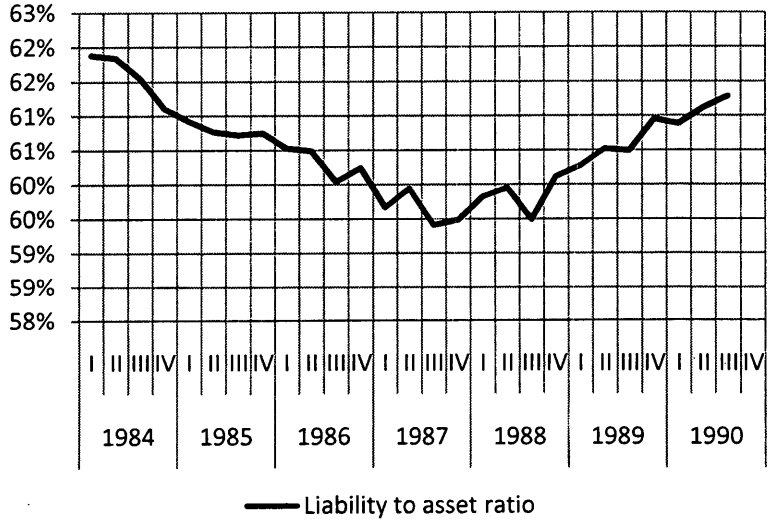



Source: CANSIM Table 326-0021

Figure 18 shows the percent change in the Consumer Price Index (i.e. the rate of inflation) for 1984 to 1994. As is apparent, there was a significant rise in the CPI growth rate after 1988, from 3.9 to 5.1 percent in 1989. This is precisely when "Canada experienced uniquely high interest rates" beginning 1989 (and persisting until 1992).[292] These high rates were both the result of overaccumulation and a shrinking mass of profit (as specified above), but also reflected a risk premium associated with higher levels of inflation. Let us examine the dynamics of overaccumulation and inflation more closely, including their connection to rising interest rates.

[292] Despite multiple attempts, long-term interest rates could not be brought down until after 1992 because both the recession had taken hold and the risk premium on borrowing had increased substantially.

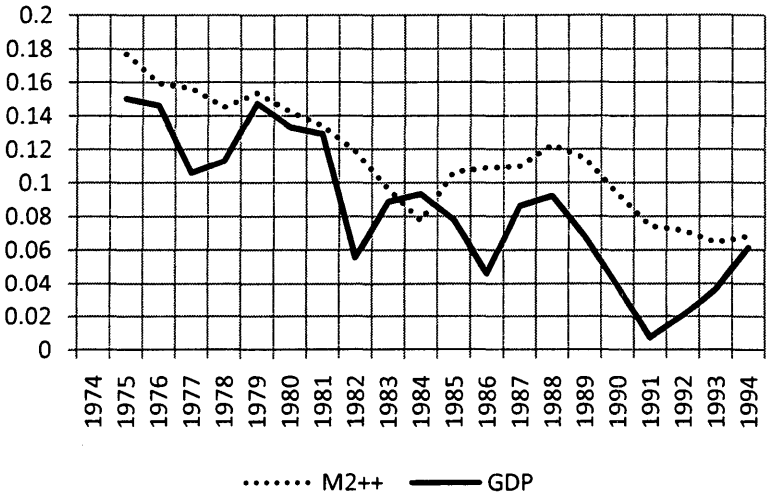
**Figure 25. Magnitude of credit increases after 1987**




Source: CANSIM Table 187-0005

In the period in question, "excess money" was introduced into the system by credit intermediaries (see Figure 25). In turn, credit sustained businesses in the short run. As a result of increasing demand for loanable funds in the context of a paucity of the latter, interest rates increased. To be sure, rising interest rates were the result of firms borrowing in the context of the general unavailability of loanable funds due to a shrinking mass of profit.

**Figure 26. Money growth outpaces output growth**




Source: CANSIM Table 176-0025 and 379-0024

As I have shown above, the rate of profit fell from 1974 until 1990-92. However, the mass of profit only started to shrink in 1988. Since the latter determines whether accumulation and therefore growth can continue (i.e. if the rate of return on the marginal unit of capital will be positive or negative), it is decisive for economic stability. Figure 26 shows the growth rate for the broadest measure of money in the system (M2++) and for GDP. In 1988, just as the mass of profit began to shrink, GDP growth dropped off, but the growth of money did not follow. Money broadly conceived grew faster than GDP in this period, as credit intermediaries lent to firms in need in the context of slowing output growth. Or, to put it differently, the quantity of money increased relative to the quantity of exchange-values produced. Therefore, by 1989 Canada experienced a strong increase in inflation. Interest rates rose in response to this increase, as creditors demanded

a premium to compensate for the declining real value of their loans.[293] To be sure, overaccumulation and the concomitant provision of credit instigated inflation after 1988 and this caused interest rates to rise. In this way, inflation is linked to the dynamics of growth via the rate and mass of profit as well as credit.[294]

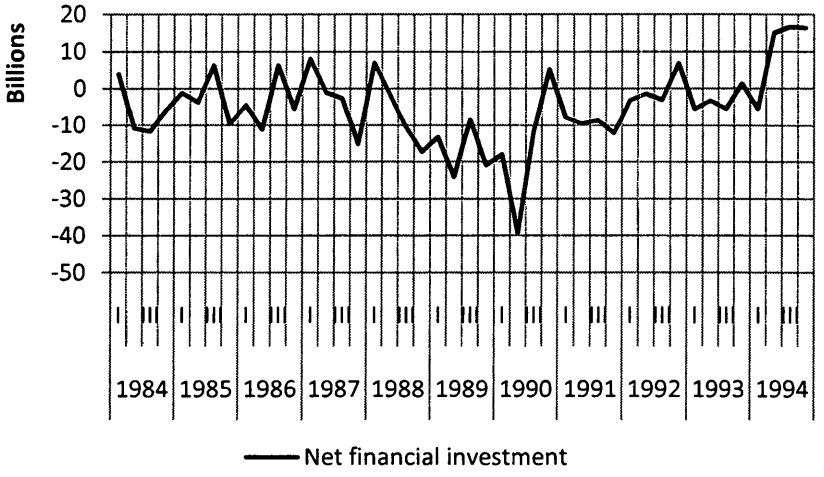
Inflation contributed to sustained business stability in two ways. First, inflation was the necessary outcome of the provision of credit in the context of slowing output growth. In other words, inflation was the indirect result of the credit that was sustaining business activities. Second, inflation chipped away at real wages and therefore provided some – but not much – relief to real business profits. For instance, real wages in manufacturing began declining as early as July 1989, well before the crisis broke out in the spring of 1990.[295] Lower real wages contributed to higher real business profitability and the provision of credit helped to sustain business investment.

Figure 27 below demonstrates the aggregate net financial investment of firms in Canada from 1984 to 1994. If the number is positive, it means firms are lending more than they are borrowing. If it is negative, it means firms are borrowing more than they are lending. The graph shows that firms were borrowing heavily to finance their operations in the period leading up to the 1990-92 crisis. In other words, the conditions for a slowdown were not only building up because of the long-run dynamics of

[293] Generally speaking, for lending to occur the interest rate must exceed the inflation rate.
[294] It is important to note that the growth of M1++, a narrower definition of money that does not include close substitutes for money (e.g. Canada Savings Bonds), grew at a slower pace in this period, much more in keeping with the rate of economic growth. This signals that *credit* was the primary factor driving inflation after 1988.
[295]CANSIM Table 382-0001 and CANSIM Table 326-0020.

accumulation (represented by downward movements in the rate and mass of profit), but also because of the growth of corporate debt.[296]

**Figure 27. Private and goverment business enterprises increased borrowing after 1988**




Source: CANSIM Table 380-0005

The foregoing analysis demonstrates that high inflation and high interest rates after 1988 were *fundamentally* the products of slowing accumulation, itself the result of the falling rate of profit and the eventual shrinking mass of profit. The situation was sustained at the expense of credit-driven inflation. As we will see below, central bank monetary policy simply added fuel to the fire by raising interest rates.

After having established the complex relationship between the falling rate of profit, the shrinking mass of profit, credit-driven inflation and the interest rate, let us now proceed to examine the relationship between accumulation, government debt, inflation

[296]For more on debt-driven dynamics, see Anwar Shaikh "Accumulation, Finance, and Effective Demand in Marx, Keynes and Kalecki." In *Financial Dynamics and Business Cycles: New Prospects*, edited by WilliSemmler. Armonk, (New York: M.E. Sharpe, 1989).

and the interest rate, before moving on to examine even more concrete, historically-specific reasons for rising interest rates in the period in question.

**Government debt and the interest rate**

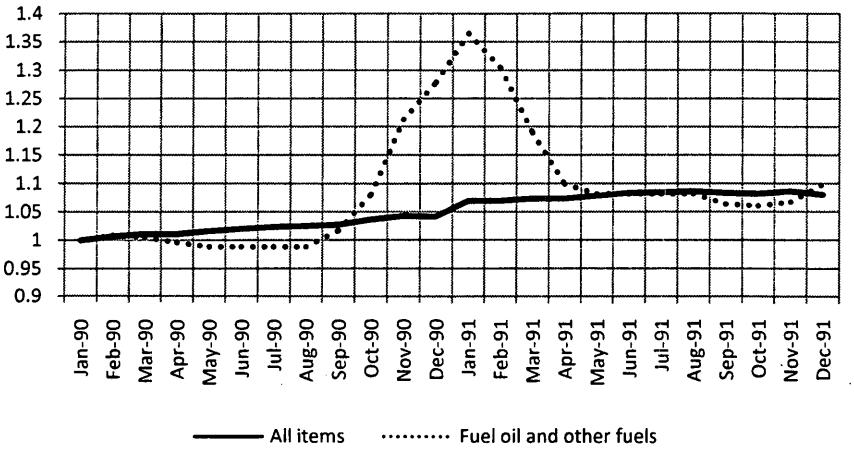
As we have seen above, the growth of government debt is a function of the debt stability condition. The facts of rising real interest rates, declining real GDP growth and a negative operating balance meant that there was a resulting build-up of government debt which, as we have noted above, contributed to increasing interest rates in this period by increasing the risk premium associated with lending to government.[297] Keeping in mind that the interest rate must exceed the rate of inflation, the associated premium in this period contributed to higher interest rates.

**Gulf War**

Our figures above demonstrate that the rate of inflation began rising significantly after 1988. A contributing factor to inflation, beginning in August 1990, was the Gulf War, when the price of oil rose dramatically (see Figure 28). This contributed to overall inflation in the period, but must be considered a secondary factor adding steam to an already existing problem rooted in the dynamics of capital accumulation. In any case, this added effect further increased the rate of interest by contributing to the already-existing inflation premium.

[297] Lewis, *In the long run*, 147.

**Figure 28. The effects of the Gulf War on inflation in Canada**




Source: CANSIM Table 326-0020

**Political risk premium**

This brings us to the political turmoil associated with the Meech Lake Accord. In 1985, Prime Minister Brian Mulroney initiated constitutional talks aimed at further integrating Québec (which had not signed the 1982 constitution) into the Confederation. The deadline for ratification was set for June 23, 1990. For a variety for reasons – not the least of which was the absenceof aboriginal representatives in the talks – the period between the conclusion of negotiations and the ratification deadline was quite tumultuous, and it became unclear whether the accord would be ratified. This prompted Bank of Canada governor John Crow on June 13, 1990 to rightly point out that "there is a risk premium" associated with Meech Lake.[298] The failure of Meech Lake would add considerable political fuel to Québec separatism, subjecting investments in the country to increased risk. As a result, a political risk premium was added to already-rising interest

[298] "Crow Blames 'Spending Surge' for High Rates." *Business Today*, 13 June 1990.

rates.[299] As it turns out, however, when all was said and done, the inability of politicians to push through the accord did not negatively affect the economy. Indeed, markets were left "unruffled" by its failure.[300]

**Exchange rate**

After having examined the concrete determinants of the rise in interest rates in the period in question, and before examining the effect of the Bank of Canada interest-rate hike on the dynamics of capital accumulation and crisis, one final dimension of this story must be examined – i.e. the effect of exchange rate dynamics on accumulation. As was examined above, the centre of accumulation in Canada in the period in question was Ontario, and the crisis itself began in the manufacturing sector before spreading to the rest of the Canadian economy. The export of goods made up 22.67 percent of GDP at its peak in the second quarter of 1988.[301] Since these made up such a large part of output at that time, it is necessary to examine the effects of movements in the exchange rate on exports.

Generally speaking, U.S. importers will be able to purchase more Canadian goods if the value of the U.S. dollar is greater than that of the Canadian dollar (the same applies to the local currency units of Canada's other trading partners). In the case we are examining, the Canadian dollar began to appreciate relative to the U.S. dollar in late 1986. In fact, between October 1986 and April 1990, just before the crisis erupted, the Canadian dollar appreciated by 16 percent relative to the U.S. dollar.[302] As a result,

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[299] Lewis, *In the long run*, 147.
[300] "Meech Lake Setback Leaves Canadian Markets Unruffled." *Financial Times*, 26 June 1990.
[301] CANSIM Table 380-0002.
[302] CANSIM Table 176-0049.

increased pressure was put on Canadian producers to remain competitive with American producers. This pressure was compounded by the introduction of the Canada-U.S. Free Trade Agreement (CUFTA), which came into effect on January 1, 1989.

Like the interest rate, the exchange rate is complexly determined. It is not possible here to go into every facet of exchange rate determination. For the purposes of this chapter, only the *internal* relation between the domestic dynamics of accumulation and the exchange rate will be considered.

I have noted above how the interest rate was affected by movements in the rate and mass of profit, government debt, inflation and historically specific events. In turn, rising interest rates attracted foreign portfolio investment into the Canadian economy and therefore pushed up the value of the Canadian dollar relative to other currencies. This is the *fundamental* dynamic at play in the appreciation of the Canadian dollar relative to the U.S. dollar in this period. Indeed, interest rates were persistently higher in Canada than in the U.S.[303] For instance, when the crisis broke out, interest rates in Canada were five percentage points higher than U.S. rates.[304] In other words, the appreciation of the Canadian dollar is *internally* related to the dynamics of accumulation via the interest rate. As such, the exchange rate must be considered a *secondary* factor in the outcome of the crisis, a factor *compounding* pre-existing problems of profitability that began much earlier, in the mid-1970s, by negatively impacting the export sector.

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[303]CANSIM Table 176-0043.

[304] Fred Langan, "Bank of Canada Blamed for Recession." *The Christian Science Monitor*, 1990.

**The Bank of Canada, the interest rate and the Great Unravelling**

Anwar Shaikh notes that "capitalist history is always enacted upon a moving stage."[305] Until now, we have considered the dynamics of capital accumulation as they occur behind our backs.[306] Our "moving stage" is in play. We have considered the effect of the abstract categories on both the rate of inflation and the interest rate. And we have further concretised our analysis by examining the effects of credit on inflation and the interest rate. Finally, we have considered a number of historically-specific influences on the interest rate, influences beyond the central bank's control. The above circumstances demonstrate the limits of the Bank of Canada's ability to influence economic outcomes. In these ways, essential context has been given to examine Bank of Canada interest rate policy.

A new phase of monetary policy began after the 1981-82 recession. The Bank of Canada "would tolerate or even encourage high interest rates if they were necessary to stem inflation."[307] The Bank of Canada believed that persistently high interest rates reflect, in part at least, a risk premium meant to offset the adverse effects of inflation on loanable funds.

> To attract funds, financial institutions and markets need to compensate savers for inflation. Interest rates therefore are higher by an inflation premium that savers demand as an offset for the declining value of their money. But since future inflation is highly uncertain, interest rates in countries with a history of inflation also carry a further premium to cover the risks caused by uncertainty about inflation. As a result, it is more costly for borrowers to obtain funds to carry out their spending plans.[308]

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[305]Shaikh, "The First Great Depression of the 21st Century," 45.
[306] Capitalist production occurs according to laws beyond the purview of individual actors. See e.g. Karl Marx, *Capital*, Volume 1. New York: Penguin Books, 1990, 135.
[307]Siklos, *Money, Banking & Financial Institutions*,440.
[308] Paul Jenkins, Fred McMahon*et al.*"Bank of Canada Review." March 1991.

Both the government and the Bank of Canada believed that lower inflation rates would result in lower interest rates, better conditions for conducting business and therefore stronger growth. After replacing Michael Wilson as Finance Minister on April 21, 1991, Don Mazankowski decisively stated that "we have to attack the root causes of inflation and bring inflationary expectations down so you can bring interest rates down ... And when you bring interest rates down you encourage growth and job creation activity."[309] In this connection, the Governor of the Bank of Canada, John Crow, similarly noted that "the lower the rate of inflation, the better. The lower the rate of inflation, the less severe the losses from inflation ... In other words, the sensible long-run objective and anchor for monetary policy is one of stable prices in our economy."[310] To be sure, "to avoid the burden that inflation imposes on the economy requires a monetary policy that is firmly directed to reaching and maintaining price stability."[311] The government and the bank were in full agreement as to what Bank of Canada policy ought to be. As we have seen above, rising interest rates were in fact a result of a falling rate of profit, shrinking mass of profit, inflation, risk premiums and a number of other concrete factors. In this context, the Bank of Canada raised interest rates to stem inflation, which it saw as the principal challenge to medium-term growth.[312]

The central bank controls the interest rates and hence inflation by setting a target for the overnight interest rate (i.e. the Bank Rate). The Bank of Canada can keep the overnight interest rate within an operating band by announcing specific rates at which it

[309] Robert Kozak, "Canada's Finance Minister Sees Recession Ending This Year." *Reuters*, May 14 1991.
[310] Terence Corcoran, "Crow's Words Put Value in Zero Inflation." *The Globe and Mail*, Oct. 26 1990.
[311] Bank of Canada, "Monetary Policy Report."Ottawa, May 1995, 24.
[312] OECD, *OECD Economic Surveys, Canada*, 1990-1, 12-13

is willing to lend and borrow in unlimited quantities.[313] If the central bank seeks an overnight rate of, say, 10 percent, it will lend to commercial banks in unlimited quantities at 10.25 percent and borrow from them at 9.75 percent. This operating band effectively sets the overnight rate.

When the central bank lowers its overnight target rate, it influences (as we have seen above, it does not *determine*) the entire range of market rates at which commercial banks lend. As a result, businesses and workers increase their borrowing, stimulating banks to increase the magnitude of credit available. Businesses and workers satisfy their need for cash by making withdrawals from the commercial banks. As the demand for money increases and the bank notes commercial banks have on hand decrease, commercial banks begin selling government securities to the Bank of Canada. In this way, the central bank introduces money into the system. The opposite occurs when the central bank increases the overnight interest rate operating band.

To understand the effect of central bank interest rate policy on the economy, it is worth keeping in mind the state of the business sector when these policies were implemented. Shrinking profits alongside rising debt levels and debt-service payments made the economy fundamentally unstable. Indeed, the long-run problems of profitability intersected with the accumulation of debt to create ever more difficult financing circumstances for business. In the context of rising interest rates, growing debt and shrinking profits, debt servicing became increasingly difficult.

[313]Bank of Canada, "The Economy and Economic Policy."Accessed August 18 2012. http://www.bankofcanada.ca/monetary-policy-matters/1-economy/.

In the eyes of the central bankers, the oncoming economic slowdown would be insufficient to cope with what they perceived as demand-driven inflation. In this context, tight monetary policy would ease inflation and restrictive fiscal policy would facilitate price stability by reducing demand.[314] To be sure, the Bank of Canada increased interest rates to squeeze out excess money. However, by reducing inflation, the central bank reduced profits and therefore business investment. And by increasing interest rates, the bank cut loose the lifeline that was keeping business investment going. It made further business borrowing impossible, as debt servicing became unmanageable. As one mainstream journalist noted at the time, corporate profits had "been falling for six consecutive quarters while high interest rates" made it "difficult to finance new projects."[315]This is why the recession was, first and foremost, caused by a reduction of business investment. This is also why the central bank was taken by surprise at how the economy reacted to the increase in interest rates. Finally, this is why *interest rate policy* appeared to most as the "cause" of the recession, when in fact it was more of an "effect" of underlying profitability problems intersecting with the downturn in the business cycle. To be sure, high interest rates were the *proximate* cause for the recession, but the economy was fundamentallyfragile to begin with, *both in terms of underlying profitability and business debt levels*. Had the mass of profit not been shrinking, high interest rates most certainly would not have resulted in an economic catastrophe of the breadth and depth we saw.

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[314] Lewis, *In the long run*, 133.
[315]Blinch, "Canada in Recession with Two Quarters of Negative Growth."

After a "very tight" monetary policy stance in 1989, the central bank switched to a "mildly tight" stance in 1990.[316] At that point, however, relaxed monetary conditions did not translate into lower long-term interest rates. In part this reflected the difficulty of maintaining the value of the Canadian dollar. In January 1990, Crow attempted to reduce interest rates "by more than a quarter percentage point, but he had to back track after foreign investors took that as a signal he had gone soft on inflation and the dollar plunged."[317]For this reason, Laidler and Robson note that "paradoxically, the proximate cause of the squeeze was an attempt by the Bank of Canada to loosen the stance of policy." Investors believed the Bank of Canada's "resolve to bring inflation down was weakening." This initiated a run on the Canadian dollar and a dramatic reversal in policy. After its failed attempt at a reduction, the central bank raised rates above 13 percent and held them there throughout the summer.[318] This was the proximate cause for the recession. However, to repeat, more fundamentally, the crisis reflected the dynamics of capitalist accumulation, manifesting themselves in a shrinking mass of profit and concomitant rising interest rates. This overaccumulation was part of the long-run dynamics of capitalist accumulation, beginning in the mid-1970s when the rate of return on investment began to decline. It was fundamentally rooted in capital deepening throughout the period. In this way, Bank of Canada monetary policy sparked the crisis, but the flammable material had been gathering for over one and a half decades.

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[316]Ben S.C. Fung and Mingwei Yuan."Measuring the Stance of Monetary Policy."Government of Canada Publications, 1999, 260.
[317] "Interest Rate Drops Again." *Kitchener-Waterloo Record*, 28 December 1990.
[318]Laidler and Robson, *Two Percent Target*, 13.

## Conclusion

In this chapter, we examined the long-run tendencies of capital accumulation and scrutinised in great detail the reasons for the depth and breadth of the 1990-92 recession in Canada. We explored the characteristics of the crisis in the U.S. and Canada, noting the greater severity in the latter. After reviewing existing explanations for the crisis, which lay the blame primarily on the interest rate, we provided an alternative classical political economic account of the crisis, centering out the rate of return on investment and the mass of profit in our analysis, and particularly pointing to the increasing deepening of capital as the main reason for the sinking of the latter. We showed that the depth and breadth of the crisis was due to a shrinking mass of profit, which was compounded by high interest rates and, later, by government retrenchment in the context of government debt instability. We also discussed the linkages between the rate of return and the mass of profit, historical contingency and the interest rate. We showed that the interest rate is complexly determined, and cannot be considered simply a result of Bank of Canada monetary policy. In so doing, we noted the phenomenological foundation for the popularity of the idea that interest rates were the primary culprit behind the recession. We also explained how these acted as a trigger for the latter, when the central bank attempted to stem inflation by raising rates. We showed that inflation itself was in the first instance a result of stagnating growth in the context of the continuing growth of credit. We examined the relationship between interest rates and the exchange rate. Finally, we have shown that the fundamental cause of the recession was an

overaccumulation of capital relative to the availability of profit, or failed valorisation, as was discussed in the theoretical section.

This historical study of the Great Canadian Slump showcases the explanatory power of the theoretical framework developed by Henryk Grossman. It demonstrates how the profound dislocation and social torment of the 1990s was inextricably woven into the very fabric of capitalist accumulation itself. In many respects, the current global economic turmoil – now in its fifth year – bears a striking resemblance to Canada in the 1990s, especially in the advanced capitalist economies of America and Europe. In light of this, a revival of Grossman's theory and methodology seems both appropriate and timely.

Corporate profits must recover, even at the expense of governments and working Canadians.[319]

– Peter Cook, *The Globe and Mail,* December 2, 1991

## Chapter 3: The Long Upturn and Recent Economic Developments, 1993-2008

The previous chapter dealt with the question of the long, tumultuous downturn, which began in the mid-1970s and persisted until the point of absolute overaccumulation in the spring of 1990. From a social standpoint, the crisis of 1990-92 brought with it a great deal of torment and turmoil. From the standpoint of capital, however, it ushered in a period of extensive industrial restructuring and the renewal of accumulation. In this chapter, I argue that the dynamics of this crisis themselves led to an improvement in the conditions for accumulation. In particular, the drop in demand for fixed capital led to a dramatic reduction in the price of new capital equipment. This led to an increase in the marginal efficiency of capital, and by 1993 business investment in new capital equipment picked up again. The intervening twenty-seven month recession ushered in a series of bankruptcies and increased the pliancy of labour. In turn, the pliancy of labour and the centralisation of capital allowed for significant restructuring in the economy. In particular, "just-in-time" production became consolidated in this period at the same time as ever cheaper computing and information communication technologies usage spread throughout the economy. This process was facilitated by the introduction of the Canada-U.S. Free Trade Agreement and the restructuring that was its result. These transformations produced a shrinking organic composition of capital, a reduction of turnover time and an increase in the rate of surplus-value, which together combined to

[319] Peter Cook. "When the Big Need Is for Bigger Profits."*The Globe and Mail*, December 2 1991.

create a rising rate and growing mass of profit, reflected in a high average MEC for the period. The latter was the fundamental condition for the stability of capitalist reproduction in this period.

The purpose of this chapter is to demonstrate how the growing mass of profit and hence relatively high levels of MEC were achieved. The first section of this chapter looks at the long-run changes in the MEC. It demonstrates that the low MEC in the period 1974-1989 was the reason for instability in that period. Likewise, the high MEC in the period 1993-2008 underlay the stability of that period. The second section examines how the crisis of the early 1990s affected the MEC and therefore investment. The third section examines the effects of industrial restructuring on the organic composition of capital. In the fourth section, we look at how the crisis augmented the pliancy of labour, thereby facilitating restructuring and how the rate of surplus-value was improved (in favour of capital). In the fifth section, we examine how the implementation of just-in-time production and information communication technologies affected the turnover time of capital throughout the period. In the sixth section, we examine how all of these factors combined to increase the rate and mass of profit, as well as the MEC.[320] Hence, this chapter deals almost exclusively with the overcoming of the crisis and how specific transformations in production and distribution affected the long-run dynamics of accumulation. In Chapter 4, we will see how these modified the short-run dynamics. Let us now examine the long-run movements in the MEC as the fundamental condition for

[320] For the methods used in calculating the organic composition of capital, the rate of surplus-value, the turnover time of capital, the rate and mass of profit as well as the marginal efficiency of capital, see Appendix.

unstable and stable capitalist reproduction in the periods 1975-89 and 1993-2008, respectively.

**Long-run movements in the MEC as the condition for capitalist stability**

As we have seen in the previous chapters, long-run stability or instability in capitalism are both functions of the marginal efficiency of capital. In this chapter, when I refer to the MEC, I mean the MEC minus the interest rate. As we have seen previously, this is the driver of active investment and hence capital accumulation. The formula for the MEC, then, can be expressed as follows:

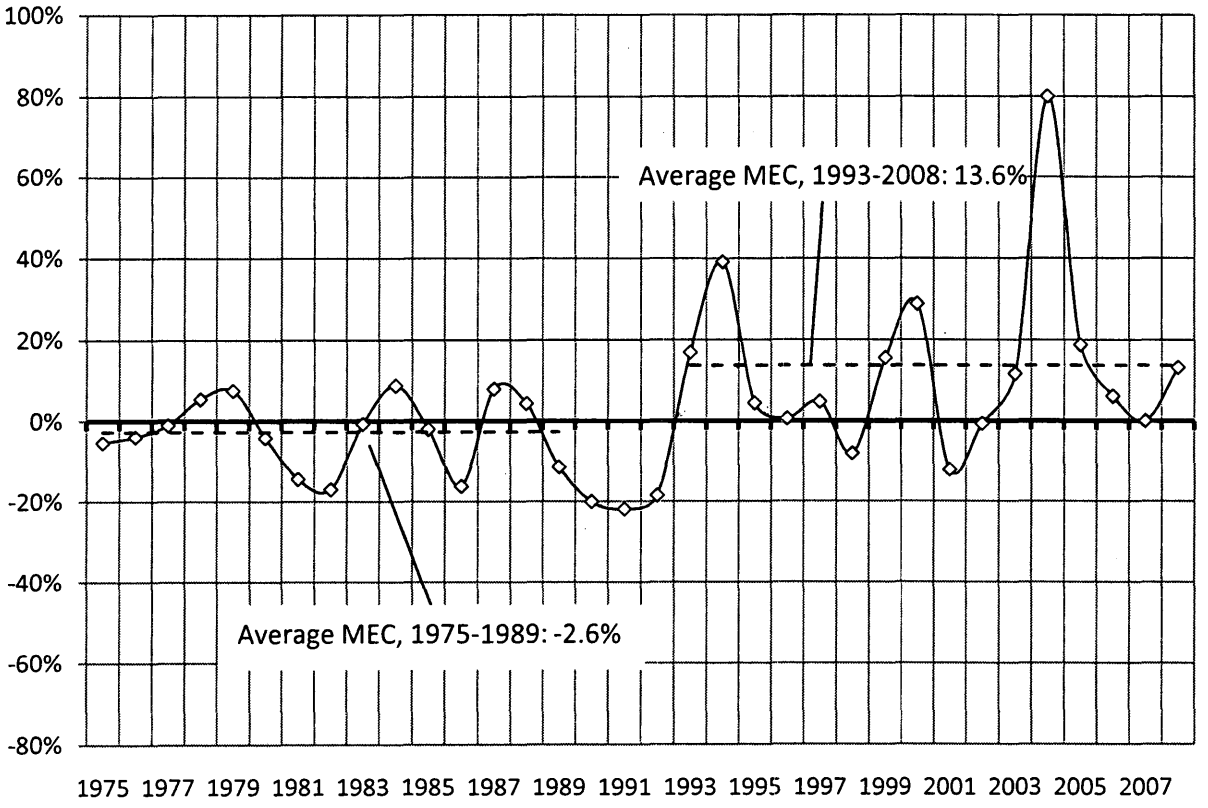
$$MEC = \left(\frac{\Delta P_t}{\Delta C_{t-1} + \Delta W_{t-1}}\right) - i$$

To re-iterate the point made in the previous chapter, the above formula shows that the marginal efficiency of capital is equal to the profits ($\Delta P$) made at time $t$ over the investments in additional capital ($\Delta C$) and labour-power ($\Delta W$) made at time $t$-$1$ minus the interest rate ($i$). In other words, the MEC is the rate of return on the marginal unit of capital minus the interest rate.

The formula above allows us to measure the MEC using Statistics Canada's national accounts, in particular its GDP as well as flows and stocks of fixed non-residential capital time series data. The measure employed in this paper uses corporation profits before taxes and gross fixed capital stock as well as wages, salaries and supplementary labour income to make its estimates of the MEC. It should be noted, however, that this measure is imperfect. To be sure, because it uses gross fixed capital stock figures to estimate the marginal unit of capital, it does not take into account the

effect of depreciation. Nevertheless, two phases of accumulation clearly emerge from my estimates.

**Figure 29. The marginal efficiency of capital in Canada**



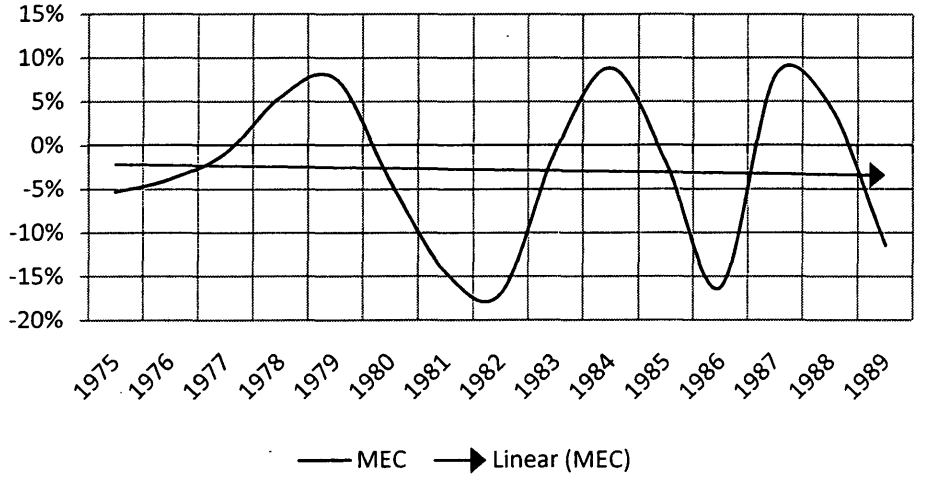

Source: CANSIM Tables 031-0002, 380-0016 and 176-0043

The first phase (1975-1989) is characterised by a low average MEC and widespread (and increasing) volatility as we have seen in Chapter 2. The second phase (1993-2008) is characterised by a higher average MEC and generalised stability. For the purposes of this discussion, we shall call 1975-1989 the "late" phase of capital accumulation, as it occurred after the long postwar boom and is characterised by escalating problems of profitability and instability. We shall name 1993-2008 the "early" phase of accumulation,

as it is characterised by a substantial period of capitalist "cleansing" (as we shall see below) and a long upswing in profits and accumulation. In the late phase of accumulation of the 1970s and 1980s, the average growth rate of the mass of profit was 9.43 percent and the average MEC was -2.6 percent. In the latest early phase of accumulation, the average growth rate of the mass of profit was 13.65 percent and the average MEC was 13.6 percent. Whereas the late phase is characterised by generalised instability, the early phase is characterised by stability.

We can examine the two phases in greater detail by disaggregating the MEC figures. In the graphs below, I have charted out the MEC for the years 1975-1989 and 1993-2008 separately. Since we are here dealing with the question of *generalised instability* leading to *crisis formation* (but not the crisis itself), I exclude the data for the years 1990-92, the depths of the Great Canadian Slump (which we examined in detail in Chapter 2).

**Figure 30. MEC, 1975-1989**

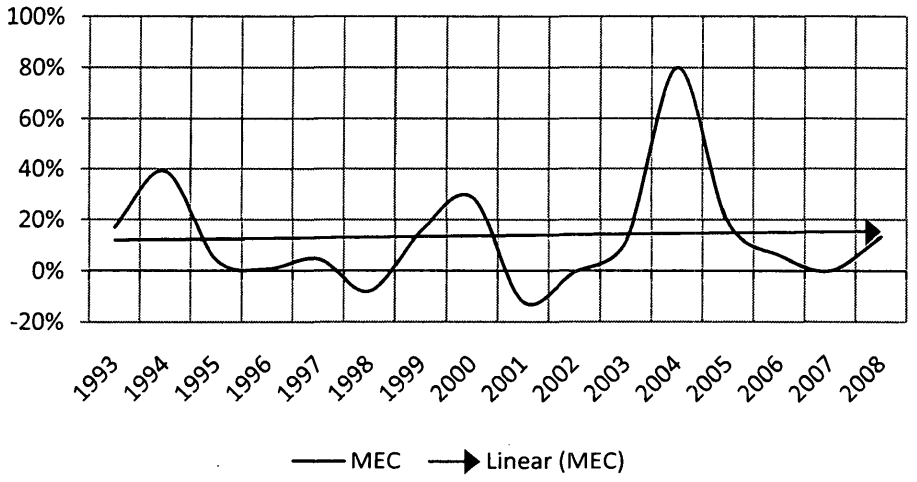



Source: CANSIM Tables 031-0002, 380-0016 and 176-0043

The graph above shows the MEC for the years 1975-1989. There are several notable features of this period. First, the trend line for the MEC slopes downward throughout the whole period. In other words, despite up-and-down movements in the MEC resulting from the cyclical fluctuations of the investment cycles and other shocks to the economy the MEC trends downward. This is consistent with the theory outlined in Chapter 1. We would expect that as the rate of growth of the mass of profit begins to slow, the MEC too begins to slope downward. Second, the average MEC for this period was -2.6 percent. The three highest points achieved in this period were 1979 at 7.5 percent, 1984 at 8.7 percent and 1987 at 7.9 percent. As discussed in Chapter 1, instability increases when the MEC is low because it becomes increasingly likely that endogenous and exogenous shocks to the economy will produce a negative MEC. Since the latter is the driver of accumulation and growth, these shocks become increasingly disruptive to economic reproduction. Of course, once the MEC trends to zero, further economic reproduction becomes impossible – a crisis of overaccumulation or failed valorisation erupts, as we saw in Chapter 2. The low and downward trending MEC contributed to economic instability and crisis in this period. In these years, we can identify two severe recessions. The recession of 1981-82 came in response to an external shock resulting from the economic downturn that began in the U.S. at this time. The shock caused a severe recession in Canada because the MEC was already low and business investment was precarious at best. Third, as we saw in Chapter 2, the slump of 1990-92 was a result of the endogenous process of capital accumulation in Canada

leading to absolute overaccumulation. The MEC trended to zero and caused a "breakdown" in the dynamics of capitalist reproduction.

**Figure 31. MEC, 1993-2008**




Source: CANSIM Tables 031-0002, 380-0016 and 176-0043

The period of instability 1975-1989 was followed by a period of relative stability. In this period, the average MEC was 13.6 percent. This means that the difference in averages between these two periods isaround 16.2 percentage points. In other words, if we use MEC as a measuring stick for capitalist stability, the economy was significantly more stable in the period 1993-2008 than in the period 1975-1989. In this period, the three highest MEC points achieved were 1994 at 39 percent, 2000 at 28 percent and 2004 at 80 percent. In other words, the highest point in the period 1993-2008 was over nine times greater than the highest point in 1975-1989. In addition, the slope of the MEC trend line in the period 1993-2008 is *positive.* Therefore, not only was the economy clearly stable, but it appears it was becoming *more* stable. This finding is consistent with our falling composition of capital and rising rate of profit figures for the same period, as

we will see below. Let us now proceed to our examination of the relationship between the crisis, the marginal efficiency of capital and the renewal of accumulation after the early 1990s recession.

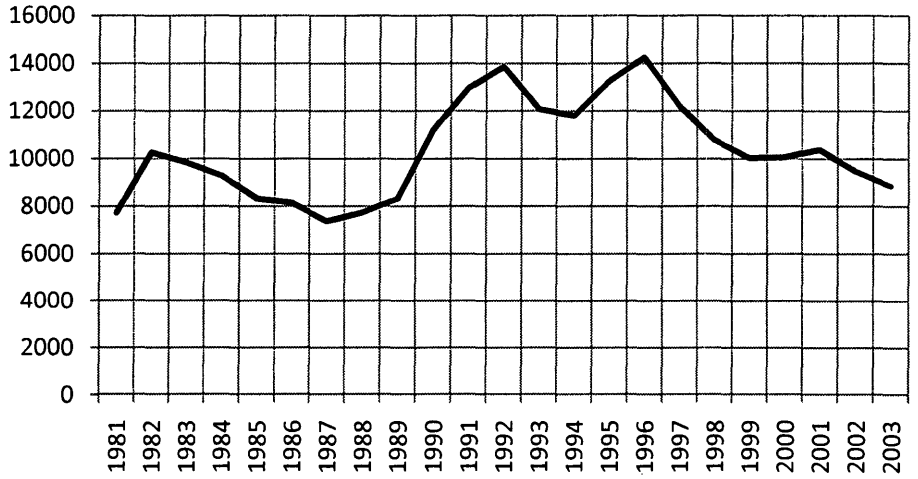
**Crisis, the marginal efficiency of capital and the renewal of accumulation**

As we have seen in Chapter 2, the high and rising organic composition of capital was the principal cause of breadth and depth of the 1990-92 crisis, as were the falling rate and shrinking and stagnating mass of profit (MEC $\leq$ 0) that were its result. The rate of return on the marginal unit of capital sloped downward throughout the 1970s and 1980s before its long-run trend turned negative. In Chapter 1, we saw how crises of absolute overaccumulation can be overcome for long-run growth in two ways; namely, the reduction of wages or the "destruction" of value represented in capital. As the theory suggests, the principal "exit" from the crisis occurred by means of the forcible reduction of the price of new capital equipment and by the reduction of total compensation to workers per hour worked, which were reflected in an improvement in the MEC. These were the first and second steps towards the renewal of accumulation, necessary but not sufficient conditions for long-run stability. The MEC rebounded significantly in 1993, jumping from -18.53 percent in 1992 to 16.84 percent the following year. A temporary recovery in the MEC, the result of conjunctural factors was enough to restart accumulation. However, sustained accumulation after this initial phase was the result of restructuring and a reduction of the organic composition of capital over the whole period. The organic composition of capital was reduced by shrinking its constant capital component. To be sure, bankruptcy and the reduction of wages were the principal means

by which accumulation got restarted (as these had an immediate effect on the MEC) and a declining organic composition of capital was how it was sustained throughout the whole fifteen-year period. The reduction of wages was necessary to get accumulation going, but they were not the reason for sustained accumulation, for wages began to grow again in the 1995. Finally, a massive reduction in turnover time facilitated profitability throughout the period. These processes resulted in an upward sloping MEC. In this way, the 1990-92 crisis was an important turning point for capital accumulation in Canada.

To be sure, the increasing paucity of surplus-value in the system resulting from the dynamics of accumulation in the 1970s and1980s made the conditions for accumulation increasingly unstable. Once the crisis broke out, bankruptcies became common. When a firm files for bankruptcy, it must liquidate its assets in order to pay off its creditors. More often than not, this takes the form of auctions in which machinery, equipment and inventories are sold below their value. In this way, the value represented in these commodities is reduced. The result for the system as a whole is an increase in the MEC. To be sure, because of the surplus of capital equipment and the sudden drop in demand, the price of the latest equipment drops relative to the available profit, and this acts as a spur to investment. Moreover, if bankruptcies are sustained for a whole period, this will act to reduce the organic composition of capital itself. Finally, as firms buy up capital equipment cheaply, funds equivalent to the value destroyed in this process are freed up for further investment. In this chapter I argue that this is what occurred in 1990-92, and what led to the renewal of investment around 1993.

**Figure 32. Bankruptcies in Canada**




Source: CANSIM Table 177-0004

The graph above demonstrates that the number of bankruptcies rose drastically during and subsequent to the 1990-92 slump and persisted at high levels until the new millennium (after declining somewhat after 1996). Business bankruptcies occurred principally in Québec and Ontario, and were concentrated mostly in retail, construction, services, manufacturing, wholesale, transportation and storage. At the height of the recession in 1992 – just before accumulation got restarted around 1993 – Québec's share of total bankruptcies in Canada stood at 37 percent, and Ontario's share stood at 30 percent. Thirty-eight thousand bankruptcies occurred between 1990 and 1992 alone.[321] To put it into relative terms, between 1989 and 1992 bankruptcies in Canada rose by 67 percent. Despite the spur to investment in 1993 owing to an improvement in the MEC, an additional thirteen thousand firms went bankrupt in that year. Bankruptcies remained at historically high levels until the new millennium.

[321] CANSIM Table 177-0004

In addition to the underlying economic turmoil that swept through the Canadian economy in the 1990s, a contributing factor to the rise in bankruptcies was the introduction of the Canada-U.S. Free Trade Agreement (1989) and the intensified restructuring that accompanied it. Norman Caulfield notes that "in 1989, when CUFTA went info affect [sic], the largest wave of corporate restructuring in Canada took off. From 1989 to 1993, in Ontario alone ... 452 major manufacturing firms closed their facilities."[322] As a result of both the slump itself and the new free trade agreement, bankruptcies rose and tremendous downward pressure was put on the price of machinery and equipment in the early 1990s. In this way, the ground was cleared for a period of renewed accumulation.

To be sure, the immediate effect the large number of bankruptcies in this period was to improve the rate of return on the marginal unit of capital by reducing the cost of new capital equipment. This was essential to the re-initialisation of accumulation beginning around 1993. The radical reduction of the price of machinery and equipment in this period is a result of both the decline in demand for fixed capital and the increase in supply resulting from liquidation sales. In this way, bankruptcy helped to improve the rate of return on the marginal unit of capital. The demand for fixed capital declined by 10 percent after the recession broke out.[323] This is reflected in a significant decline in the machinery and equipment price index. The decline principally took place in office furniture, mechanical power transmission equipment, tanks, industrial trucks and tractors,

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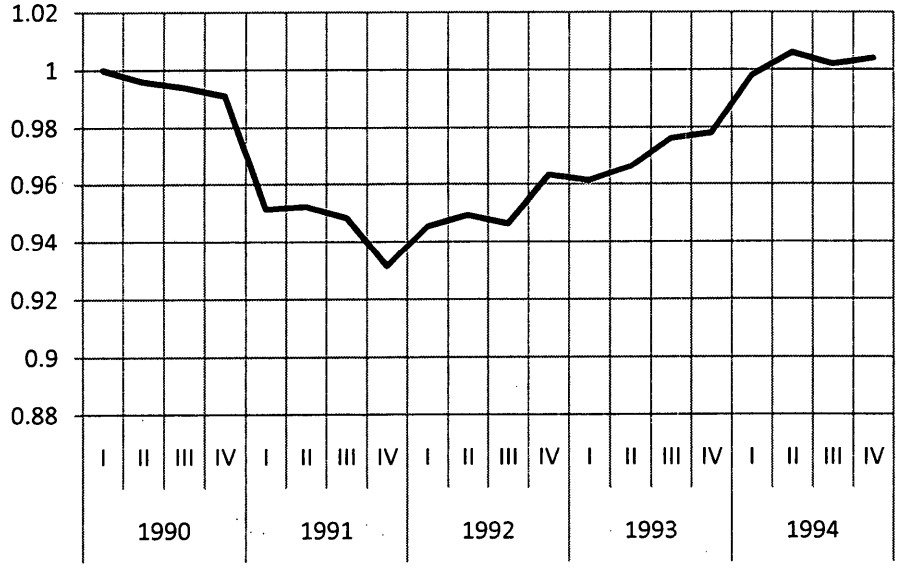
[322] Norman Caulfield, *NAFTA and Labor in North America* (Chicago: University of Illinois Press, 2010): 135.
[323] CANSIM Table 381-0010

refrigeration and air conditioning equipment, conveyors, escalators, elevators and hoisting machinery, fans, air circulators and commercial trailers and semi-trailers.[324] In sectoral terms, the price declined little in agriculture and forestry, but fell significantly in mining, manufacturing, transportation, construction, trade, finance, business and personal services, public administration and fishing.[325] The price decline is best captured by the quarterly Machinery and Equipment Price Index (MEPI) time series below.

**Figure 33. Machinery and equpiment price index (MEPI)**




Source: CANSIM Table 380-0003

The radical decline in demand for fixed capital and the fire-sale of existing assets by bankrupt firms resulted in a reduction in the price of new machinery and equipment. Between the first quarter of 1990 and the fourth of 1991, the price of new machinery and equipment fell by 6.86 percent. And it remained below pre-recession levels until 1994. To repeat, this decline reflects both the fact that insufficient surplus-value was available

[324]CANSIM Table 327-0013
[325] CANSIM Table 327-0016

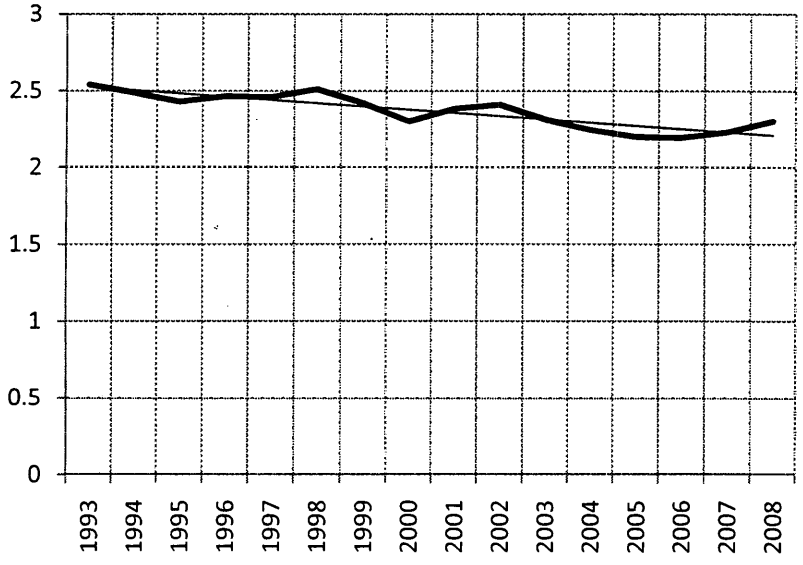
for profitable investment in new machinery and equipment and the fact that business bankruptcies were forcibly devaluing capital equipment through the fire-sale of business assets. As a result of these complimentary processes and the dynamics of the recession itself, the demand for these commodities declined relative to their supply and so too did their prices.

Keeping in mind that a positive rate of return on the *latest investments* is essential to accumulation (i.e. MEC $\geq$ 0), as was explained in great detail in Chapter 1, a radical reduction in the price of new machinery and equipment in the context of zero or negative marginal returns would result in favourable conditions for renewed accumulation. In this case in particular, a reduction of 6.86 percent in the price of fixed capital would significantly improve the rate of return on the marginal unit of capital. It is important to note, however, that this process is not the same as a dramatic reduction in the organic composition of capital that an extended and *sustained* period of accumulation requires. A reduction of the organic composition of this sort would only occur *after* accumulation got restarted, and would be the result of the cheapening of the means of production and on-going restructuring of the sort that occurredthroughout the 1990s to be discussed below. To be sure, the 1990s crisis did not directly lead to a significant reduction of the organic composition of capital. The latter was the result of the restructuring that this crisis made possible. It was a necessary, but not a sufficient cause for the declining organic composition of capital in the period 1993-2008.

**Crisis, restructuring and the organic composition of capital**

As argued above, the renewal of accumulation around 1993 was principally the result of a radical reduction in the price of fixed capital and the concomitant rise in the rate of return on the marginal unit of capital. Contributing to increased profitability was a reduction in real wages. Once accumulation got restarted, the organic composition of capital began to fall (see Figure 34 below). In other words, it was taking less capital to produce the same magnitude of output. This provided the underlying basis for the long period of growth beginning around 1993 and lasting until 2008. Explaining the decline in the organic composition – the fundamental condition for sustained accumulation – is the purpose of this section.

**Figure 34. Organic composition falls, 1993-2008**




Source: See Appendix

Once accumulation got restarted after the initial phase of the crisis, the price of machinery and equipment began to stagnate and then fall, a result of bankruptcies, new

forms of work organization and a reduction of the abstract labour-time represented by these commodities. Especially after 1997, the cheapening of the inputs of production was a large contributor to the sinking organic composition of capital.[326] Notably, the five major categories in which the price of business supplies declined in the period 1997-2011 were computers, communication and transportation equipment. The cost of business computing sank by 71 percent, that of communication equipment by 34 percent, and cars, trucks and vans by 29, 28 and 20 percent, respectively.[327] The significance of price declines in these areas lies in the important role they played in the JIT and ICT revolutions that occurred in this period. The cheapening of these commodities contributed to reducing the organic composition of capital and was part of the massive organizational and technological restructuring associated with JIT in the period.[328] We will examine these further below. Figure 35 below demonstrates that the price of machinery and equipment fell by an extraordinary 28.37 percent between the fourth quarter of 2002 and the third of 2011. Next to the crisis of 1990-2, the stagnating and

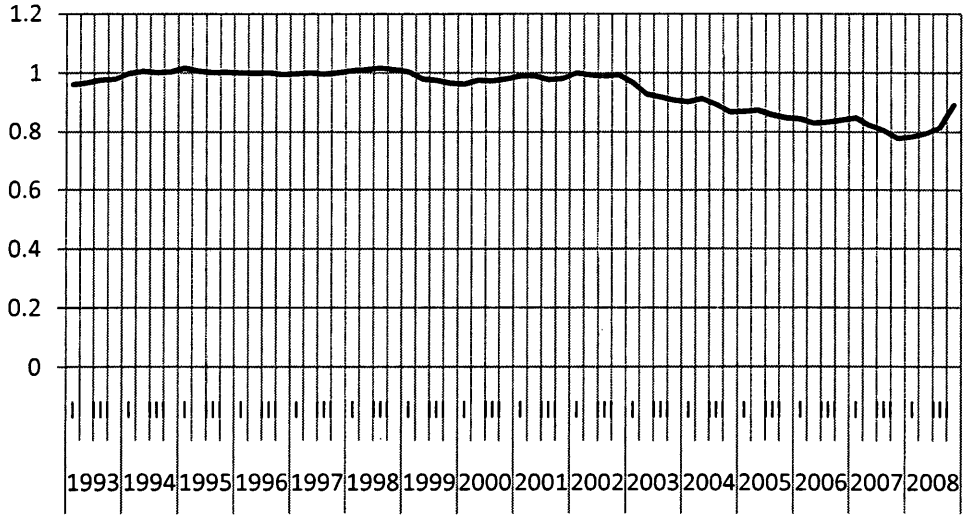
[326] Circulating capital here includes raw materials, goods in progress and finished goods. These are available as monthly data from Statistics Canada's CANSIM Series v801800, v802263 and v802726. Statistics Canada has produced data for circulating capital from 1992 onward. The data we have been using to this point have been for fixed capital only. Since circulating capital is another form of constant capital, we can more accurately estimate the organic composition of capital in Canada for the period after the 1990-92 crisis by including it in the numerator. I have presented the measure for the organic composition of capital (without circulating capital) above to make it comparable to the measure for the period before 1990-92. The difference after adding circulating capital is negligible and does not affect the overall downward sloping trend.

[327] CANSIM Table 3270041. Note that this was part of a secular decline in the prices of these commodities across the period. For instance, between, 1997 and 2007, the price of business computers fell by 59 percent, the price of communication equipment by 24 percent, and the prices of cars, vans and trucks by 18, 17 and 11 percent, respectively.

[328] It is interesting to note that the "only private-sector industry to have union density substantially above the national average is transportation and warehousing, at 41 percent." See Harvey J. Krahn, Graham S. Lowe and Karen D. Hughes, *Work, Industry and Canadian Society* Sixth Edition (Toronto: Nelson, 2011): 371.

then declining cost of fixed capital was the most significant contribution to sustained accumulation in this period.

**Figure 35. Machinery and equipment price index**

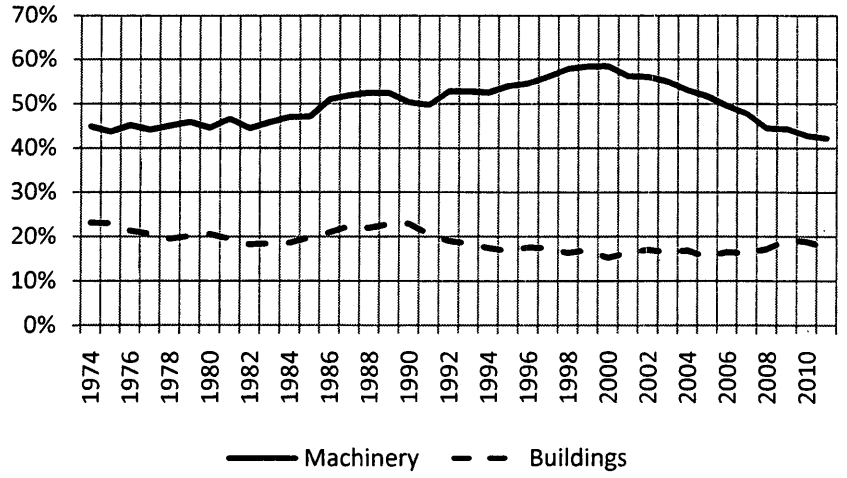



Source: CANSIM Series v1997749

Here a word about the form and character of accumulation in this period is necessary. First, it is important to remember the difference between extensive and intensive accumulation. Extensive accumulation represents accumulation on a given technological level (and therefore implies a relatively stable relation between the number of workers and the quantity of capital each worker employs), whereas intensive accumulation represents the accumulation of capital in labour-saving technologies (and therefore implies increasingly fewer workers relative to the value of the capital equipment employed). Second, as we have seen above, accumulation can only continue if the mass of profit is growing. Hence, extensive accumulation is a more stable form of accumulation because it employs more workers on given technological basis, thereby allowing the mass of profit to grow. Therefore, extensive accumulation is more amenable

to continued capital accumulation. Of course, neither of these "types" of accumulation exists in pure form. The particular "mix" of intensive and extensive forms of accumulation is always a theoretical-empirical question.

**Figure 36. Investment in machinery and buildings as a portion of total investment**




Source: CANSIM Table 031-0002

The graph above shows the ratio of investment in machinery and equipment as well as buildings and structures to total investment. These ratios are good proxies for intensive and extensive forms of accumulation.More investment in machinery and equipment indicates intensive accumulation, whereas investment in buildings and structures to house workers and machinery indicates extensive accumulation. These figures come with a few caveats. First, it is important to note that accumulation is always more intensive than it is extensive, as evidenced by the higher absolute level of investment in machinery and equipment relative to that in buildings and structures. This is a necessary result of the competitive imperative and the labour-saving bias of

technological innovation in capitalism, as discussed in Chapter 1. Second, the figures above are imperfect, for they do not take into account the cheapening of the means of production that was a salient feature of the period. Therefore, the figures for the level of investment in machinery and equipment relative to buildings and structures are not perfect proxies for intensive accumulation. Moreover, the reduction of storage costs associated with JIT surely played a part in reducing investment in buildings and structures in this period. Therefore, our measure for extensive accumulation should be taken with a grain of salt.

With the above caveats in mind, the graph seems to demonstrate that the character of accumulation from 1974 to 1982 was more extensive than it was in the subsequent period from 1992 to 2000, during which time the level of investment in machinery and equipment rose relative to that in buildings and structures, and therefore marked a period of intensive accumulation. As we have seen in Chapter 2, the employment-to-population ratio did not recover from the Great Canadian Slump until approximately the year 2000. This would certainly be consistent with intensive accumulation, where more labour-saving technologies are adopted at the expense of workers. This does not, however, necessarily imply a rising organic composition of capital in this period, for investment in buildings and structures were *falling* relatively and the price of new capital equipment was shrinking, thereby acting to reduce the constant capital component of the organic composition. After 2000 and until present, the intensity of accumulation has slowed down, but it has still been relatively more intensive than extensive. The slowing intensity of accumulation after the year 2000 may account for the productivity gap between

Canada and the U.S. But it certainly contributed to the stability of the Canadian economy relative to that of the U.S., since the organic composition of capital has not been growing as quickly. This also accounts for the different rates of employment in the U.S. and Canada that we saw in Chapter 2. The introduction of labour-saving technology is notably slower when extensive accumulation occurs. This acts to slow down the growth of the organic composition of capital (thereby prolonging accumulation) and to employ more workers. The result is slower productivity growth relative to countries undergoing intensive accumulation. Finally, the graph demonstrates that the percentage of total investment devoted to buildings and structures declines from around 20 percent before the 1990-92 crisis to around 17 percent after. This reflects in part the introduction of JIT distribution systems and the reduction of storage costs. The result was to reduce the organic composition of capital by reducing its constant capital component. This will be explored further below in the section dealing with the specificities of the 1990s restructuring.

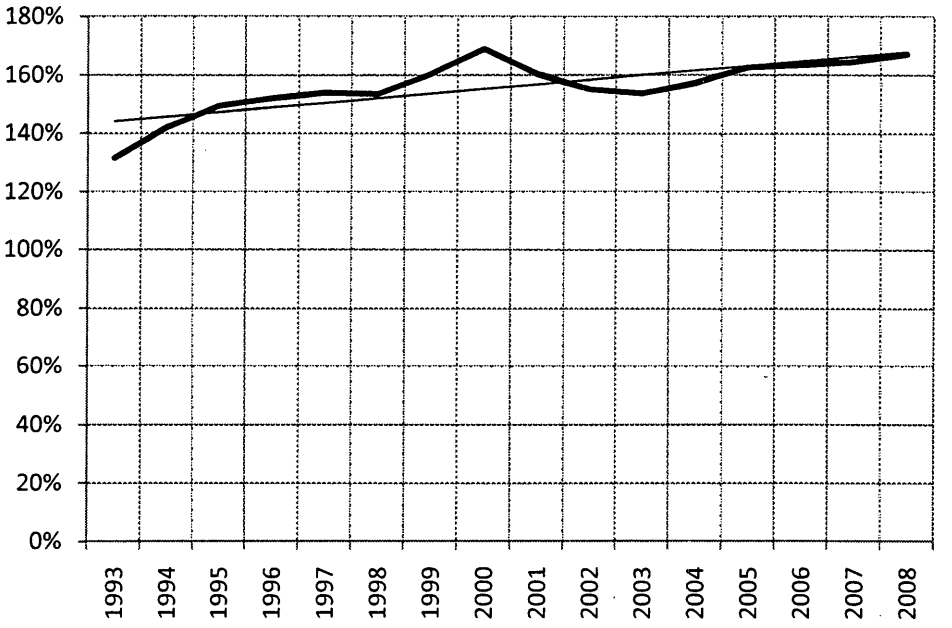
**Unemployment and the rate of surplus-value**

When firms go bankrupt, workers are laid off. One of the irrationalities of capitalism is that it produces circumstances in which perfectly functioning, productive equipment lies idle while masses of unemployed workers cannot find work. As noted in the previous chapter, the official rate of unemployment in Canada rose from 6.7 percent in 1989 to 12.5 percent in 1993.[329] The increase in the reserve army of desperate workers acted both to discipline those who still had work and to lower real wages. The result was

[329] CANSIM Series V2440389

a relatively pliant workforce alongside an increasing rate of surplus-value. As Norman Caulfield notes, between 1989 and 1993 companies blamed factory closures "on increased competition" due to CUFTA, but for those workers who were spared unemployment "*employers demanded concessions in wages and benefits and in work organization, all in an attempt to lower costs.*"[330]

**Figure 37. Rate of surplus-value rises, 1993-2008**




Source: See Appendix

Workers were laid off and by 1993 employers had successfully lowered compensation for those remaining employed. In the second quarter of 1990, $166 billion (2005 dollars) were paid out in wages and salaries. By the first quarter of 1991, this had fallen $147 billion. It continued to fall throughout the period and finally bottomed out in the first quarter of 1997 at $138 billion. Most of this decline was achieved by reducing

[330] Caulfield, *NAFTA and Labor in North America*, 135, emphasis added.

the number of workers employed by means of new forms of work organization and the implementation of labour-saving technologies. Additionally in this period, real wage payments declined by 20 percent.[331]Importantly, however, in the initial phase of the recession total compensation per hour worked continued to rise. In other words, for those workers who were able to keep their jobs, compensation continued to grow in the initial phase of the slump. It was only in 1993 that a reduction in this ratio was achieved. In other words, the reduction of wages of employed workers was an important component in the establishment of the long phase of capital accumulation beginning around 1993. In fact, total compensation per hour worked remained below its first quarter 1993 level for seven quarters. It did not begin to improve until 1995. All of this took place in the context of the ever-increasing productivity of labour, as is shown in Figure 38 below. From the standpoint of labour's share of output (i.e.labour compensation divided by current dollar output), the latter declined by eight percent between the second quarter of 1992 and the first quarter of 1995.[332] The legislated wage freeze for public sector workers in the 1990s contributed to the downward pressure on wages, as did the "trigger-happy" usage of back-to-work legislation.[333]In short, the crisis helped to re-establish a rising rate of

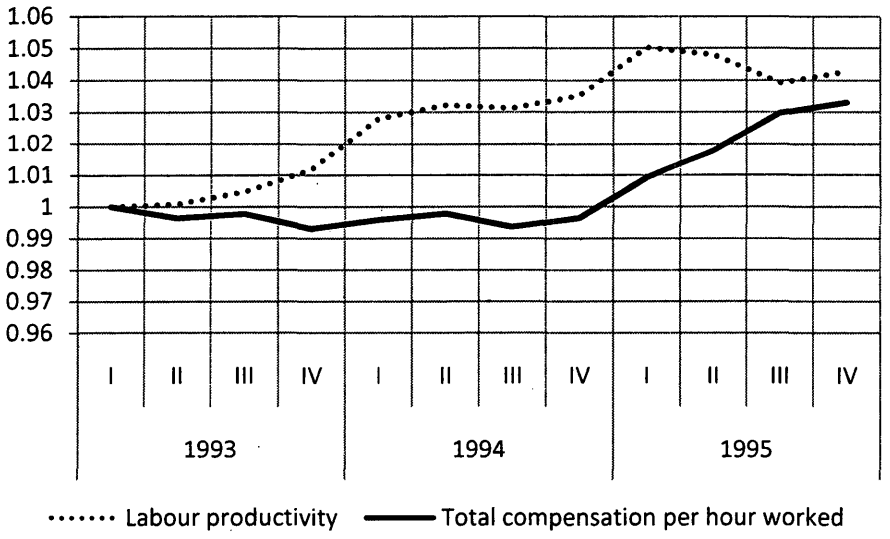
[331] IHS Global Insight, "Historical Wages and Salaries and CPI, Quarterly, Canada."Accessed March 5, 2011.

[332] CANSIM Table 383-0008

[333]Leo Panitch and Donald Swartz, "Neo-Liberalism, Labour, and the Canadian State." In Vivian Shalla (Ed.) *Working in a Global Era: Canadian Perspectives* (Toronto: Canadian Scholars' Press, 2006): 348-351. Back-to-work legislation was just one aspect of the attack on labour in this period. This was complemented by austerity measures in Ontario, where the newly elected New Democratic Party imposed the so-called "Social Contract," a three-year plan designed to make deep cuts to the public sector. The austerity agenda included the reopening of public sector union collective agreements, the implementation of a wage freeze for public servants and forced unpaid leave for public sector workers (the infamous "Rae Days," named after Ontario's Premier, Bob Rae). Virginia Galt, "Public workers face further pay restraint Government to limit arbitration awards." *The Globe and Mail*, Nov. 30, 1995.

surplus-value. All of this contributed greatly to the renewal of accumulation around 1993 and the restructuring that followed it, as the theory outlined in Chapter 1 suggests.

**Figure 38. Effects of the slump on labour**



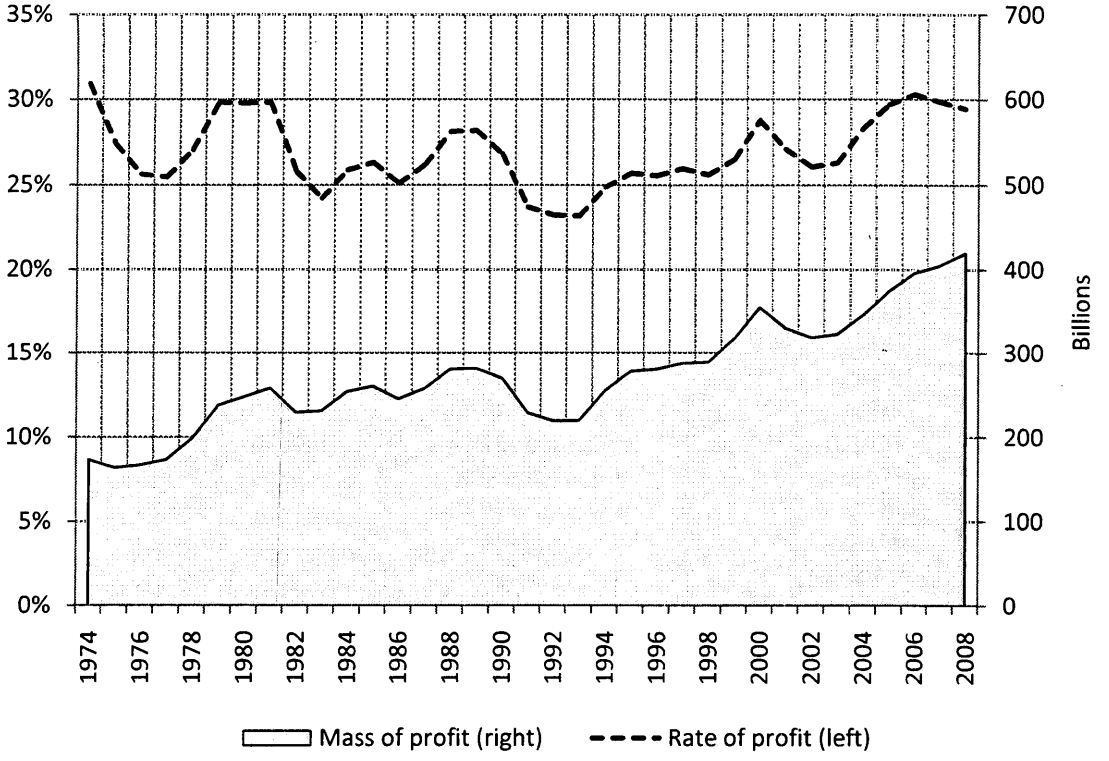

Source: CANSIM Table 383-0008

**Recovery and restructuring**

Accumulation re-initialised around 1993 owing to an increase in the MEC, improvements in the organic composition of capital and the rate of surplus-value. As a result, the rate and mass of profit began to grow (see Figure 29 below).[334]

[334] The mass of profit is adjusted for inflation. See CANSIM Table 3260021.

**Figure 39. Rate and mass of profit grow after 1990-92**




Source: See Appendix

In turn, increased profitability, in combination with a pliant labour force and a complicit labour leadership, allowed for the implementation of new technological and organizational changes throughout the period. Labour leadership justified these changes in the name of international competitiveness. As the labour historian Normal Caulfield notes:

> In their pursuit of partnership with the transnationals, the unions have assisted employers in the slashing of wages, the imposition of speedup, and the elimination of millions of jobs. These actions are justified on the grounds that sacrifices by workers are necessary to help their "national" businesses make profits and compete with foreign rivals.[335]

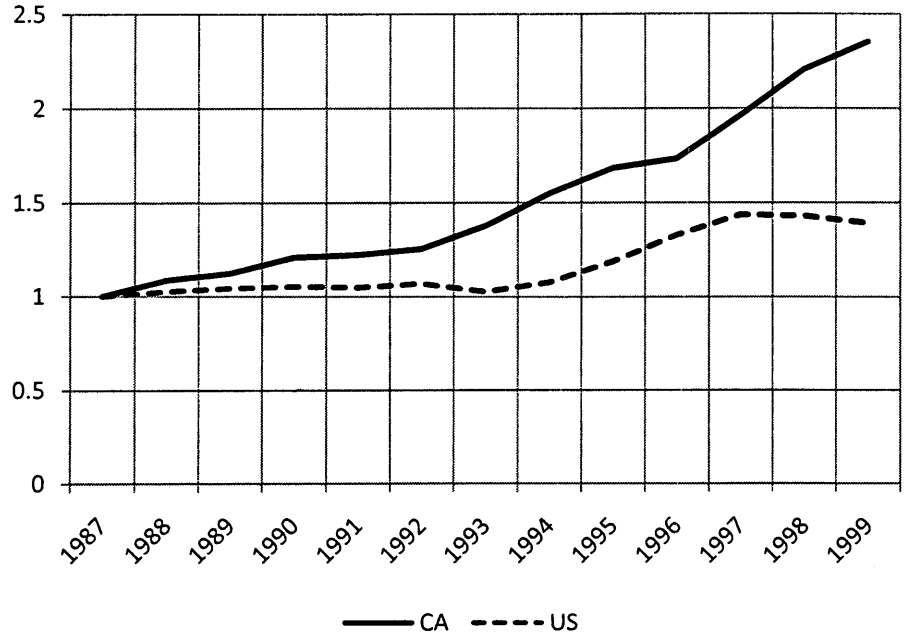
[335] Caulfield, *NAFTA and Labour in North America,* 141.

Below I will show how changes in technology and organization led to a further reduction of the organic composition of capital and significantly decreased turnover time, thereby further improving profitability, the MEC, and prolonging the period of sustained growth.

**Research, development and innovation**

Innovation in manufacturing in this period is captured in the OECD figures on manufacturing business investment in R&D and patent applications. Figure 40 below shows indices for expenditure on R&D in both the U.S. and Canada in the period in question. In Canada, expenditures in R&D did not increase much between 1987 and 1992. After 1993, however, investment in R&D began to grow steadily. In the U.S., R&D trended flatly and remained at 1987 levels until 1993, after which it grew, but at a slower rate than in Canada. Whereas R&D investment continued in Canada after 1997, it stagnated in the U.S. In other words, increasing investment in innovation in Canada coincided with the renewal of accumulation around 1993.

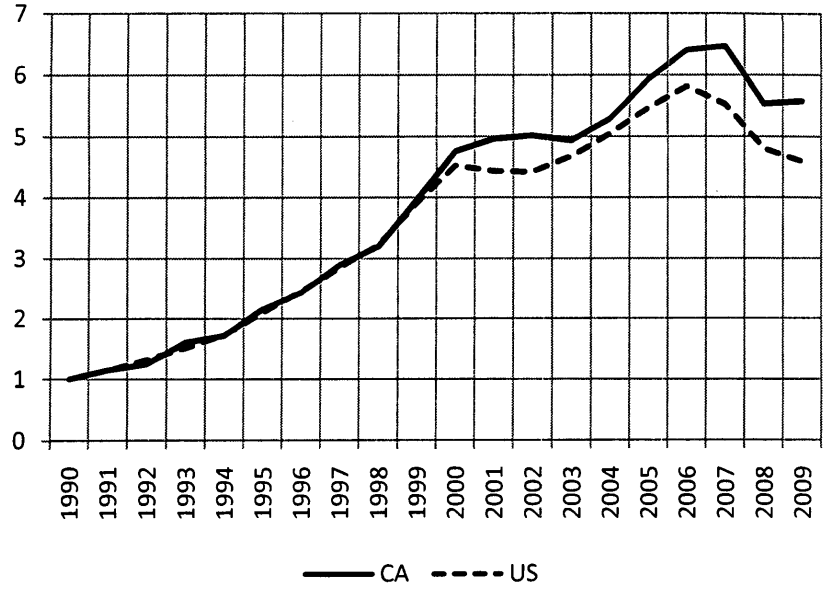
**Figure 40. Manufacturing expenditure on R&D indices**




Source: OECD Statistics, Business enterprise R&D expenditure by industry, manufacturing

Another means by which we can capture innovation is by examining the OECD patent data. Figure 41 below shows indices for the total number of patent applications in Canada and the U.S. Patent applications trended upward throughout the 1990s and 2000s. In Canada, patent applications peaked in 2007. And since the turn of the millennium, patent applications patterns in the U.S. and Canada have diverged somewhat, indicating a greater growth of innovation in Canada than in the U.S.

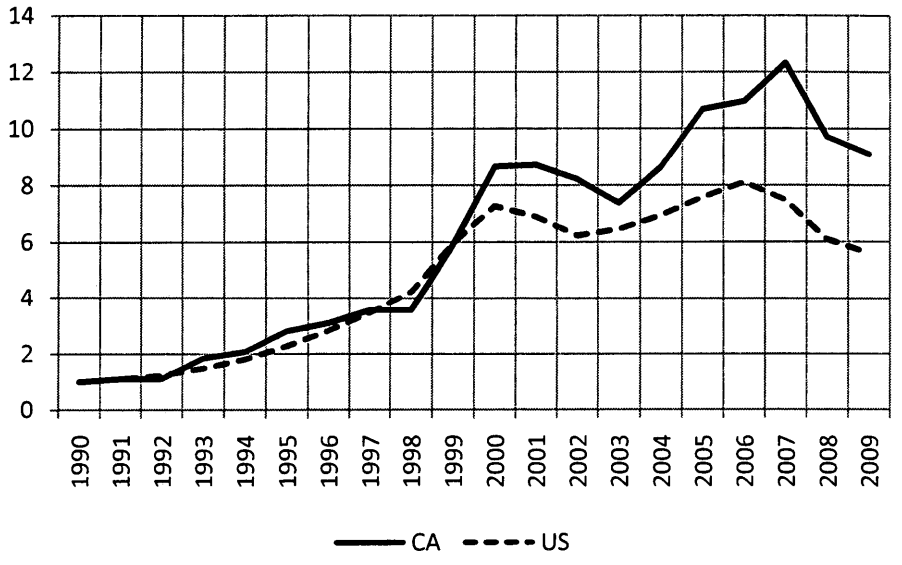
**Figure 41. Patent application indices**




Source: OECD Statistics, Innovation Indicators, patent applications

Importantly, this divergent pattern is most pronounced in ICT innovation. The indices in Figure 42 below demonstrate that Canada has been doing much more innovation relative to its 1990 level than the U.S. has relative to its own 1990 level. In fact, innovation appears to have been stagnating in the U.S. since about 2000. In Canada, on the other hand, innovation took a hit between 2000 and 2003 (likely the result of the bursting of the IT bubble), but began to grow again thereafter – and significantly so relative to the U.S.

**Figure 42. ICT patent application indices**




Source: OECD Statistics, Innovation Indicators, patent applications

High levels of ICT innovation have been an important aspect of the just-in-time revolution in Canada. This is an important point we shall return to below. For now it is sufficient to say that the innovation indicators we examined above show signs of improvement throughout the 1990s in Canada. This was part of the overhaul in the economy that the crisis of 1990-92 facilitated and that the renewal of capital accumulation in Canada required.

**Just-in-time production and distribution**

The implementation of new forms of work organization and technologies occurred in the wake of both the 1982 and 1990-92 crises.[336] These developments contributed to a rise in the rate of surplus-value, a fall in the organic composition of capital and the reduction of turnover time. Constant capital shrunk because overhead

[336] A full account of the restructuring of the nineties is beyond the scope of this chapter. For a more extensive treatment of this topic, see James Rinehart, *The Tyranny of Work: Alienation and the Labour Process* Fifth Edition (Toronto: Nelson, 2006): 148-168.

costs were reduced as JIT methods of organization became consolidated in the economy. To be sure, the consolidation of JIT contributed to a growing mass of profit in this period and hence to a high and stable MEC.

The "JIT revolution" began after the 1982 recession,[337] but did not become consolidated in the economy until after the 1990-92 crisis.[338] In fact, organizational restructuring along these lines "occurred in close to half of Canadian firms with 100 or more employees between 1991 and 1996."[339] In a 1993 economic survey of Canada, the OECD wrote that the 1990-92recession "has been followed by an unusually slow recovery." The drag was in part a result of industrial restructuring which had "adverse short-run impacts on employment." It was precisely this restructuring that underlay the vigorous investment in machinery and equipment – exceeding pre-recession levels. Indeed, business "fixed investment has shown surprising strength" as firms "used the opportunity to install inventory-monitoring technology." In turn, the implementation of JIT and ICT was "reflected in tighter inventory management."[340] As a result, "scheduling of JIT workforces is now standard practice in a wide range of offices" in primary, secondary and tertiary sectors.[341]

JIT has been one-sidedly characterized as a technique to reduce the storage costs associated with maintaining large inventories. One mainstream author notes that

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[337] OECD, *OECD Economic Surveys: Canada, 1989/1990* (Paris: OECD Publications and Information Centre, 1990): 19.
[338] Joseph D. Blackburn, *Time-Based Competition: The Next Battleground in American Manufacturing* (Homewood, Illinois: Business One Irwin, 1991): 18. See also OECD, *OECD Economic Surveys: Canada, 1992* (Paris: OECD Publications and Information Centre, 1992): 17-18.
[339] Krahn*et al.*, *Work, Industry and Canadian Society*, 259.
[340] OECD, *OECD Economic Surveys: Canada, 1993* (Paris: OECD Publications and Information Centre, 1993): 11-18.
[341] Rinehart, *The Tyranny of Work*, 164.

"inventory reduction is a benefit of JIT, but not its *raison d'être*. Time is the elemental concept that transfers to other functions within the organization."[342] In other words, JIT is principally a means whereby the time between production and consumption is reduced. This involves the reduction of inventories (and hence capital "tied up" in warehouses) in favour of "just-in-time" shipments, but also the reduction of non-production activities (activities that do not produce surplus-value). The point is to "eliminate all time waste in the production of a product or delivery of a service." As a result, JIT "is characterized by small production runs, quick changeovers, and low inventories – all of which escalate product velocity."[343] In the language of classical political economy, this means that JIT serves to reduce the turnover time of capital; i.e. to speed up the production and circulation of commodities. To be sure, the benefits of JIT for capital are: (a) the reduction of constant capital; (b) the reduction of non-production activities; (c) the reduction of turnover time; and (d) the reduction of uncertainties associated with inventory investment.

**ICT and JIT**

The implementation of JIT was greatly facilitated by the spread and consolidation of ICT in the 1990s, as we have mentioned above. The effects of the revolution in information communication technologies on production should not be underestimated. For example, the introduction of the banal and seemingly innocuous Blackberry has dramatically increased work time and therefore the extraction of absolute surplus-value. A recent survey found that 80 percent of Americans spend an extra seven hours a week

[342] Blackburn, *Time-Based Competition*, 7.
[343] Blackburn, *Time-Based Competition*, 21.

checking e-mail and answering phone calls. That is equivalent to a month and a half of unpaid overtime annually.[344] Unfortunately, no similar surveys have been done for workers in Canada. However, given the wide proliferation of ICT throughout the country (as we will see below), a similar figure is not unlikely.

The proliferation of ICT has profoundly affected the manufacturing and service industries. ICT supports the sharing of JIT schedules and the establishment of integrated information links.[345] In turn, these reduce shipment discrepancies, which allows for the reduction of inventories.[346] The reduction of inventories is of central importance in reducing constant capital. The reduction of warehousing costs decrease per unit overhead costs by spreading the costs over more units out output.[347] Firms with low inventory do better than firms with high inventory. Indeed, "firms with abnormally high inventories have abnormally poor long-term stock returns."[348]

Getting JIT right requires sophisticated, centralized coordination. ICT serves this function. These technologies allow for the instantaneous tracking and coordination of shipments. In this connection, James Rinehart notes:

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[344] Good Technology, "Good Technology Survey Reveals Americans Are Working More, but on Their Own Schedule." http://www1.good.com/news/press-releases/current-press-releases/161009045.html. Accessed January 2, 2013.

[345] It is important to note that technological innovations in capitalism are not neutral. As James Rinehart notes, "labour process changes associated with the implementation of new technology are constructed by managers and specialists in the employ of business enterprises. Consequently, their goal is not to provide jobs that are more complex and challenging, easier to perform, healthier, and safer, but to raise productivity and cut costs ... [Indeed], computers have enhanced managers' ability to coordinate, monitor, and, hence, control the activities of their subordinates in a wide range of industries and occupations." See Rinehart, *The Tyranny of Work*, 157-158.

[346] KannanSrinivasan, Sunder Kekre and TridasMukhopadhyay, "Impact of Electronic Data Interchange Technology on JIT Shipments," *Management Science* 40, no. 10 (1994): 1291-1304.

[347] Blackburn, *Time-Based Competition*, 9.

[348] Hong Chen, Murray Z. Frank and Owen Q. Wu, "What Actually Happened to the Inventories of American Companies between 1981 and 2000?," *Management Science* 51, no. 7 (2005): 1015-1031.

> Giant retail firms like Sears and Wal-Mart now rely on information technology to cut costs and employees. Wal-Mart uses data gathered by scanners at the point of sale and transmits it electronically to its suppliers, who then decide what and how much to ship. Suppliers send their goods directly to Wal-Mart stores, thus eliminating storage at warehouses. These procedures have eliminated purchase orders, bills of lading, and large inventories. They also have cut costs by eliminating both the manual and the clerical labour needed to handle orders, shipping, and storage.[349]

Figure 43 below demonstrates the radical reduction in the inventory-to-shipment ratio.[350] Keeping in mind that turnover time is equal to production and distribution time, the inventory-to-shipment ratio is a good proxy for it. Figure 43 demonstrates that turnover time fell steeply in 1982 and 1990-92, coincident with the recessions of those years. In other words, as the economy went into recession, commodity sales slowed down. As a result, inventories were not being replenished. We see, however, that during the period of renewed accumulation around 1993, the inventory-to-shipment ratio remained low. This fact points to structural changes in the production and distribution of commodities. JIT was clearly consolidated in the mid-1990s as many firms "used the opportunity to install inventory-monitoring technology."[351]Moreover, not only did inventories decline *relative*to shipments, but inventories declined *absolutely* from 2000 to 2011.[352] To be sure, firms were now holding lower levels of inventories.

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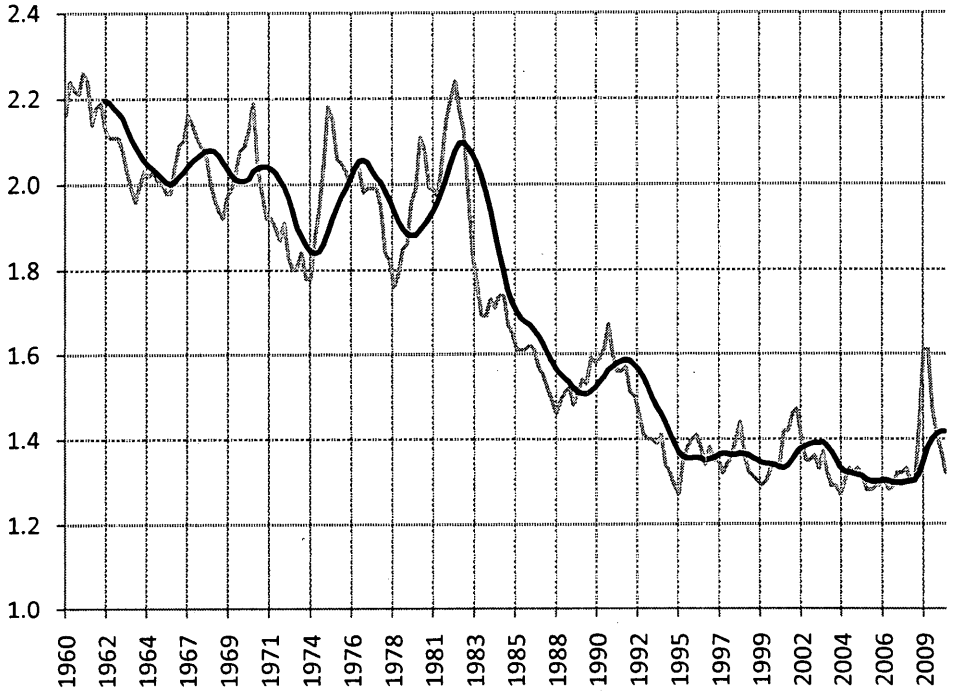
[349] Rinehart, *The Tyranny of Work*, 155.
[350]IHS Global Insight, "Historical Index of Inventories to shipments, Quarterly, Canada."Accessed October 19, 2010.
[351] OECD, *OECD Economic Surveys: Canada, 1992* (Paris: OECD Publications and Information Centre, 1992): 18.
[352] CANSIM Series v4331199

**Figure 43. JIT consolidated by the mid-1990s**




Source: CANSIM Table 377-0008

If we take into consideration the effect of the introduction of JIT and ICT on investment over the period 1961-2011, a clearer picture of the processes at work emerges. Table 4 below shows average investment by type as a share of GDP for the years 1961-1981 and 1982-2001. The table demonstrates that average investment in buildings as a share of GDP has been lower after 1982 than in the period before. Likewise, investment in machinery and equipment has been higher. As concerns inventories, investment in inventories as a share of GDP has averaged 0.32 percent since 1982, well below the 1961-1981 average of 0.80 percent. The reduction in investment in buildings and inventories reflects the adoption of JIT and ICT in the recent period. Nevertheless, the total share of GDP devoted to *investment* has actually increased from 10.37 percent in

1961-1981 to 11.96 percent in 1982-2011. As can be gleaned from the table, the difference is a result of greater investment in machinery and equipment.

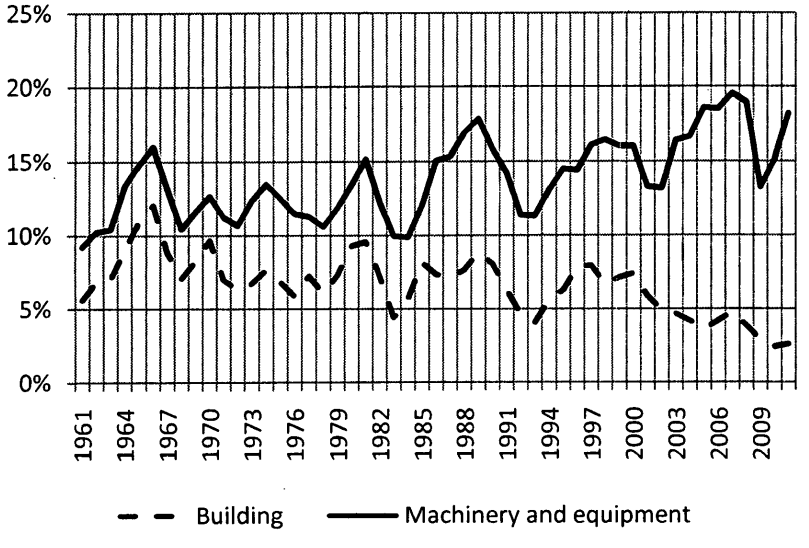
**Table 4. Average investment by type**

| Type | 1961-1981 | 1982-2011 |
|---|---|---|
| Machinery | 3.58% | 6.54% |
| Buildings | 5.99% | 5.10% |
| Inventories | 0.80% | 0.32% |
| **TOTAL** | **10.37%** | **11.96%** |

Source: CANSIM Table 380-0017

The effect of JIT in the manufacturing sector is even more striking. Figure 44 below shows investment in machinery and equipment as well as buildings and structures in the manufacturing sector in Canada. The graph demonstrates a clear downward trend in investment in buildings accompanying an upward trend in investment in machinery and equipment.

**Figure 44. JIT and investment in manufacturing**




Source: CANSIM Table 031-0003

Interestingly, for this sector end-year gross capital stock in manufacturing shrank by about 17 percent from 2000 to 2011. To be sure, *the rate of growth of gross capital stock has been negative since the beginning of the new millennium.* Nevertheless, the trend for the rate of investment has been positive and growing. If we disaggregate the figures for investment, the reason for the *apparent* decline in the magnitude of capital stock is the reduction in investment in buildings and structures. Machinery and equipment investment has been high and increasing. This is a clear sign of the place of JIT in the manufacturing sector.

**Finance**

In addition to their effects on JIT, advancements in computing and information networks have allowed for the development of new financial instruments and information flows that "speed financial transactions" in the economy.[353] It is beyond the scope of this chapter to enter into the rich debate regarding recent developments in finance. However, certain characteristics of finance in contemporary capitalism must be addressed as they concern the development of the argument being made in this dissertation. First, the increasing capacity to distribute credit via ICT channels encourages disintermediation (the exclusion of credit intermediaries from the dynamics of the demand for and supply of credit). The result is increasing competition over the supply of credit as firms tap into money markets directly and as needed. It is important to note, however, that increasing competition in finance is not a result of the *quantity* of organizations issuing credit, but rather of the *competitivetechnological innovations* that ease access to credit. Second, the

[353] Alfredo Saad-Filho, "Crisis *in* Neoliberalism or crisis *of* neoliberalism?" In Leo Panitch, Greg Albo and VivekChibber (Eds.) *Socialist Register 2011* (London: Merlin Press, 2010): 247.

above processes contribute to the reduction of interest rates when the conditions for accumulation warrant it. Third, these developments facilitate the flow of commercial and bank credit within and between countries. In this way, they contribute to the decline of turnover time by channelling the flow of idle surplus-value into profitable avenues (when they exist). As Itoh and Lapavitsas note, "commercial credit can foster the expansion of capitalist production as a whole. By economising on the amount of idle capital held overall, and by speeding up the turnover of capital, commercial credit can raise the general rate of profit."[354] Moreover, in *Capital*, Vol. 3 Marx writes that "credit accelerates the velocity of the metamorphosis of commodities, and with this the velocity of monetary circulation."[355] ICT has facilitated this process. To be sure, idle surplus-value is more easily put to use in turning over existing capital owing to technological advancements in finance.

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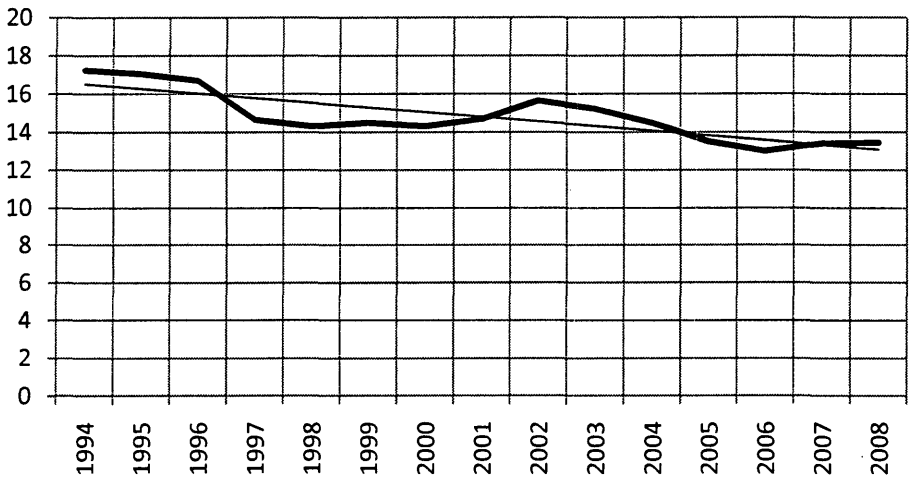
[354] Makoto Itoh and Costas Lapavitsas, *Political Economy of Money and Finance* (London: MacMillan, 1999): 90.
[355] Karl Marx, *Capital*, Vol. 3 (New York: Penguin, 1991): 567.

**Effects on turnover time**

**Figure 45. Turnover time decreases, 1994-2008**




Source: See Appendix

As the theory suggests, turnover time fell throughout the 1990s as ICT and JIT organizational changes became consolidated and the price of machinery and equipment declined. The crises played an important part in this process by improving profitability, freeing up investment funds and creating a pliant labour force. Moreover, the restructuring involved in the implementation of ICT and JIT made possible "a downsizing spree" in which workforces were continually reduced and reabsorbed.[356] As Moody notes, "speed-up and job loading" as well as "management-by-stress" reduce employment "more or less continuously over time even if the market holds up or expands."[357] For workers, it was as if the recession of 1990-92had never ended.[358] As late

[356] The official unemployment rate fell more-or-less consistently from 1993 (12.5 percent) to 2007 (5.3 percent). See CANSIM Series v2440389.
[357] Kim Moody. *Workers in a Lean World: Unions in the International Economy* (New York: Verso, 2001): 100.
[358] Rinehart, *The Tyranny of Work*, 156.

as 1998, firms continued to undergo significant organisational change, especially larger firms, as Table 5 below demonstrates.

**Table 5. Percent of firms undergoing organizational change in 1998 by firm size[359]**

| Firm size | 1-19 employees | 20-99 employees | 100-499 employees | 500+ employees |
|---|---|---|---|---|
| **Organizational** | 38.6 | 63.7 | 77.4 | 87.9 |
| **Re-engineering[360]** | 16.9 | 35.5 | 50.8 | 65.2 |
| **Total Quality Mgmt.** | 11.8 | 22.1 | 26.4 | 27.4 |
| **Downsizing** | 7.7 | 16.0 | 22.4 | 33.8 |

Despite sustained economic growth after the recession, employment vulnerability was widespread, reflecting "very high levels of employment insecurity."[361] The world confronting workers, which was seemingly in a perpetual crisis,lent itself to a "recessionary psyche," which eased the resistance of the labour movement, contributed to higher rates of surplus-value extraction and fortified technological and organizational changes.[362] For instance, Lewis notes that, in this period, two out of three Canadians believed they had "lost control over their economic future," and that "this despair continued even as the economy and fiscal position started to improve in the mid-1990s."[363]

Contrary to all historical experience, these changes to workers' lived experiences were reflected in lower strike rates *despite economic growth.* As Brym points out, the

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[359]Statistics Canada, "Workplace and Employee Survey Compendium 1999, Table 2" http://publications.gc.ca/Collection/Statcan/71-585-X/71-585-XIE1999001.pdf.Accessed January 2, 2013.

[360] Re-engineering is "the radical redesign of a firm's entire business process to achieve maximum output and quality with the least labour by tightly integrating technology and tasks." See Krahn*et al.*, *Work, Industry and Canadian Society*, 278.

[361] Rinehart, *The Tyranny of Work*, 166.

[362] Thom Workman, *If You're In My Way, I'm Walking: The Assault on Working People Since 1970* (Halifax: Fernwood, 2009), 67.

[363] Timothy Lewis, *In the long run we're all dead: the Canadian turn to fiscal restraint.* (Vancouver: UBC Press, 2003): 146.

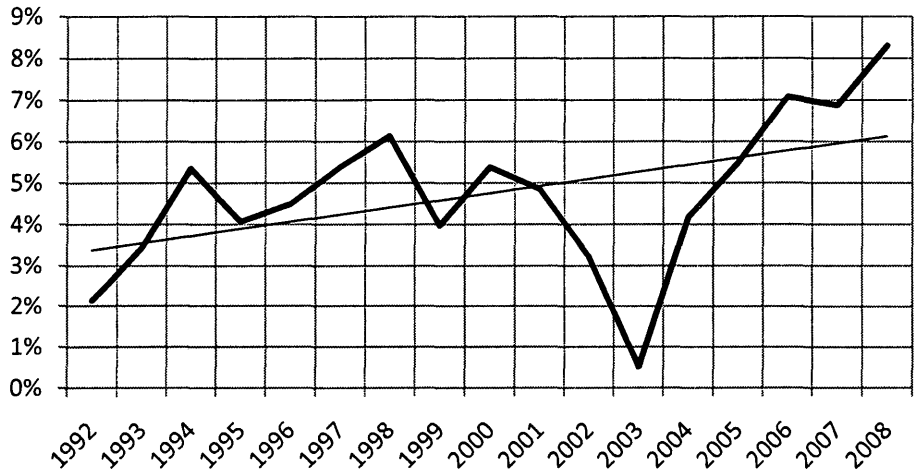
historical relationship between the rising rate of employment and the rising strike rates broke:

> In the 1987–2000 period, the inverse relationship between the unemployment rate and weighted strike frequency nearly disappeared. The business cycle had little effect on workers' propensity to strike. The reason? Actions taken by employers and governments from the mid 1970s to the late 1990s—introducing free trade, cutting budgets for a wide range of government assistance programs, passing laws and regulations that undermined unions—disempowered workers and rendered the strike a less effective weapon.[364]

The upshot of the above processes is that restructuring encountered less resistance from workers and so became easier for capital to accomplish. The result was a reduction in turnover time, due to a decline in constant capital, an overall speed-up in the production, distribution and realization of values, and the smoother flow of financial capital throughout the economy. This allowed for a quicker pace of accumulation and an improved yearly rate of profit. These changes contributed to the overall stability of Canadian capitalism in this period, reflected in a rising rate of accumulation (see Figure 46 below).

[364] Robert J. Brym, "Affluence, Power and Strikes in Canada, 1973-2005." In Robert J. Brym (Ed.) *Society in Question*, Sixth Edition (Toronto: University of Toronto, 2011): 55.

**Figure 46. Rate of accumulation rises, 1993-2008**




Source: CANSIM Table 310002

The consolidation of JIT also contributed to smoothing out the inventory cycle. To be sure, the inventory cycle is a function of fluctuations in inventory investment. As I have shown, inventory-to-shipment ratios stabilized in the 1990s. Inventory *investment* became increasingly stable, and this stabilization was due to the implementation of JIT and ICTs. We will explore these dynamics in greater detail in Chapter 4.

To sum up, we have seen that the stability of a given period is a function of the average MEC. The latter is a function of the growth rate of the mass of profit, which is determined by movements in the Marxist variables, such as the organic composition of capital, the rate of surplus-value, turnover time and the rate of profit. We have seen how the crisis of 1990-92 ushered in a period of extensive restructuring, which included the introduction of new technologies and forms of work organisation. The latter, it was shown, have thrown into reverse the tendencies of decline experienced in the 1974-1992 period. A falling organic composition of capital and turnover time, accompanied by a

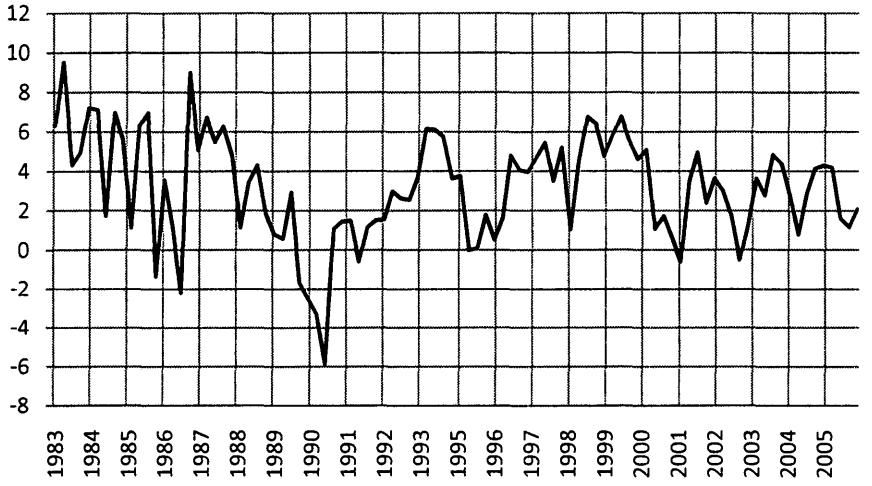
rising rate of surplus-value created the conditions for the growth of the rate and mass of profit and therefore the MEC. The result was a long period of stable capital accumulation beginning around 1993 and interrupted by the 2008-09 global financial crisis. Until now we have dealt only with the long-run tendencies of development in the Canadian economy. The next chapter examines the effects of the aforementioned processes and transformations on the shorter business cycles discussed theoretically in Chapter 1. It argues that the wide adoption of JIT and ICT in production and distribution, linking up firms flexibly along the supply chain along with the radical reduction of inventory levels and the increase in inventory control, all this has stabilized the inventory investment environment and therefore inventory investment itself. The result has been a dampening of the inventory investment cycle. It is to these processes that we now turn.

## Chapter 4: The long upturn, ICT, JIT and the inventory cycle

As I have shown in the previous chapter, the introduction of just-in-time production and information communication technologies in the period 1993-2008 dramatically changed the way surplus-value was produced and realised. These were structural changes particular to the neoliberal phase of capitalism in Canada. On the one hand, these changes affected the magnitude of surplus-value produced in any given year by reducing turnover time. On the other hand, the realisation of surplus-value embodied in these commodities was facilitated by tighter linkages in the supply chain. Whereas the previous chapter dealt with the questions of accumulation and long-run trends in profitability relating to these changes, this chapter deals with short-run developments in conjunction with structural changes particular to the last two decades. In particular, it deals with the problem of the realisation of surplus-value in the context of the theory of effective demand, the business cycle, and the effects of JIT-ICT on the latter. In this chapter, I argue that to the extent that JIT-ICT permeates the Canadian economy it contributes to stabilizing the inventory investment environment. As the OECD notes, "just-in-time delivery practices and computerised inventory management have allowed firms to respond more quickly to changes in demand."[365] Quicker response times have reduced discrepancies in production. I argue that fewer disruptions along the supply chain have reduced fluctuations in inventory investment. In this way JIT-ICT has contributed to smoothing out the inventory investment cycle as well as the overall pattern of growth. This accounts for the smoother pattern of GDP growth after 1990-92 in Figure 47 below.

[365] OECD, *OECD Economic Surveys: Canada, 1991* (Paris: OECD Publications and Information Centre, 1991): 20.

**Figure 47. Real quarterly GDP growth rates**




Source: IHS Global Insight, Real GDP Growth Rate, Quarter-On-Quarter, Canada

In particular, in the above graph, notice the erratic pattern of growth in the period 1983-1990. It is marked by sharp up-and-down movements. After the recession of 1990-92 the pattern became smoother with fewer erratic fluctuations annually. This is both the result of a higher average MEC after the recession, which provided a certain level of buoyancy against shocks to the economy, and the result of the JIT-ICT structural transformations that took place in this period. The preceding chapter focused on the role of the MEC in smoothing out GDP growth. This chapter focuses on explaining the relationship between JIT-ICT, smoother inventory investment and the reduction of fluctuations in the inventory investment cycle.

In the first section of this chapter, I reiterate the theory of the inventory investment cycle, which was first examined in Chapter 1. In the second section, I discuss the theoretical linkages between information communication technologies, just-in-time production and the business cycle in contemporary capitalism. In the final section, I

provide supporting empirical evidence for my argument that the introduction of JIT-ICT has contributed to a smoother pattern of economic growth in Canada in the 1993-2008 period.

**The inventory investment cycle**

Before proceeding, it is worthwhile repeating the essential elements of the business cycle theory informing this work (these are discussed in greater detail in Chapter 1). First, there is no assumption that supply and demand are in equilibrium. In fact, the opposite is assumed. Capitalism is an anarchic system where supply persistently overshoots and undershoots demand. This results in situations of excess demand, which spurs additional investment resulting from above-average profitability. Second, increasing investment to meet excess demand is financed by credit. In other words, expansions are fuelled by credit. Contractions, on the other hand, are caused by the growing debt burden caused by financial leakages. To be sure, the expansion must come to an end once the debt burden becomes unsustainable. This basic logic applies to the inventory investment cycle as well as to the fixed capital investment cycle. It is the former that is the focus of this chapter. In particular, we will see how the stabilisation of the inventory investment environment reduces the shocks to which the system is subjected. As a result, a smoother pattern of growth emerges. Let us now proceed to examine how changes in production and distribution have altered the character of the business cycle in the recent period by stabilising the inventory investment environment.

**Theoretical effects of JIT-ICT on the circulating capital investment cycle**

The analysis in this section is limited insofar as it does not seek to explain lean production in its entirety.[366] Rather, it only seeks to explain the effects of JIT-ICT on the shorter business cycle. With this caveat in mind, the principal means by which JIT-ICT modifies the business cycle is by reducing the number of random *endogenous* shocks to which the system is subjected, especially along the supply chain. To be sure, in this section, it will be argued that JIT alters growth by tightening the supply chain, therebyreducing supply chain *disruptions* and making *investment* in inventories more stable. As was outlined in Chapter 1 and the previous section, excess demand drives additional investment in circulating capital, but investment cycles around an endogenous growth trend because of the financial drag additional investment implies. These, respectively, are the boom and bust phases of the business cycle. To be sure, investment in circulating capital to meet excess demand is financed by bank borrowing. For this reason, if investment in circulating capital becomes more stable, then the concomitant reduction of debt servicing payments will raise internally available finance relative to potential profit and allow investment to continue for a longer time. This accounts for the lengthening of these cycles in the recent period. However, more stable investment in circulating capital implies a more stable investment environment in which excess demand is reduced. In the previous chapter we saw how JIT-ICT improves the average rate of profit and improves accumulation. In this chapter, I will show how an unintended

[366] For an extensive analysis of lean production, see Kim Moody, *Workers in a Lean World: Unions in the International Economy* (New York: Verso, 2001): 85-113.

consequence of JIT-ICT is to *stabilize* accumulation by stabilizing inventory investment. In short, JIT-ICT reduces the endogenousdiscrepancies between supply and demand generated by the anarchic character of production in capitalism. In this way, it reduces (but does not eliminate) the stimulus of excess demand. This is made possible by new, tighter network linkages resulting from JIT-ICT. Let us explore this further.

**JIT and *kanban***

Of particular importance to our analysis is *kanban*. In principle, *kanban* is employed by JIT firms to reduce waste. It is a "pull planning system that authorizes manufacturing based on the state of the production system." In this system, signals are sent "to the preceding production phases that authorize a specified component batch delivery for production."[367] By producing on demand, *kanban* results in the reduction or outright elimination of buffer inventories while communicating "customer demand upstream to trigger process steps just-in-time to meet demand."[368] Since inventories are smaller, firms can react more quickly to changes in patterns of demand. Consequently, the gap between supply and demand narrows. Therefore, in practice *kanban* has the unintended consequence of tightening the integration of the supply chain and reducing discrepancies between supply and demand.

*Kanban*is designed to combat several types of waste, including overproduction, inventory, waiting, transportation, wasted motion and defects. Of particular importance to us are the first four types. Overproduction and inventory waste are, of course, linked.

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[367]I.A. Kouri, T.J. Salmimaa and I.H. Vilopola, "The Principles and Planning Process of an Electronic Kanban System." In T. Sobh*et al.* (Eds.) *Novel Algorithms and Techniques in Telecommunications, Automation and Industrial Electronics* (New York: Springer, 2008): 99.

[368] Stephen Cimorelli, *Kanban for the Supply Chain: Fundamental Practices for Manufacturing Management*, Volume 1 (New York: Productivity Press, 2006): Chapter 1.

Kanbanemphasises "producing only what your immediate internal or external customer needs" so as to eliminate commodities for which there is no current demand and to save inventory storage space.[369] From the standpoint of the supply chain, however, this means that supply becomes more responsive to demand. The tight linkages between the demand for and supply of inputs results in fewer discrepancies. In principle, and this is worth emphasising, *the result is to reduce gluts and associated shocks to profitability.Kanban* also aims to reduce waiting time, which is unproductive and wasteful from the standpoint of capital (from the standpoint of workers, on the other hand, it is often a welcome relief). For this reason, management strives to "pull signals to ensure that a product from the supplying operation arrives when it is needed by the ordering process."[370] On the one hand, if the product arrives too early, inventories grow and wasteful storage costs increase. Remember, JIT firms attempt to keep inventory levels low. On the other hand, if the product arrives too late, workers idle unproductively. As was seen earlier on, the synchronisation of supply and demand has the effect of reducing circulation time for commodities, and hence turnover time. In other words, commodities spend less time sitting in warehouses. The unintended consequence for the system as a whole is to decrease the response time to problems in the supply chain; e.g. to more quickly reduce or increase inventory investment depending upon the needs of the supplying and receiving firms or, to put it differently, the state of the production system. Moreover, the reduction and better timing of transportation acts to further buttress the integration of the supply chain by ensuring that inputs arrive in a timely and orderly fashion. Finally, to

[369]Cimorelli, *Kanban for the Supply Chain,* Chapter 1.
[370]Cimorelli, *Kanban for the Supply Chain,* Chapter 1.

reduce errors and improve the flow between units of production, it is important that both the supplier and receiver firms be able to "see" into each other's operations. Not only does this mean that "suppliers, assemblers, and distributors [should] form networks within which information and technologies are shared,"[371] but that supplier and receiver "organizations should map the current value stream, and together create a future value stream in the procurement process."[372] The integration of the production schedules of diverse firms acts to further integrate the supply chain, by better matching up demand and supply. Indeed, if suppliers fail to integrate sufficiently, they may be replaced. All of this implies the technological capacity to perform these planning functions. Indeed, the dictates of capitalist competition imply an *increasing* technological capacity to plan.

This brings us to the role of computers and ICT in JIT processes. So far we have examined the theory of the business cycle and the theoretical role of JIT in integrating the supply chain. In the next section we will examine the theoretical relationship between ICT and JIT before investigating limitations of JIT on the supply chain.

**ICT, JIT and *kanban***

It is important to note that lean business does not generally use ICT for the collection of statistics and the centralized coordination of information. To the contrary, it finds and addresses problems by direct observation on the shop floor, seeks continuous

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[371] Tony Smith, *Technology and Capital in the Age of Lean Production: A Marxian Critique of the "New Economy"* http://www.public.iastate.edu/~tonys/: 40. Accessed January 2, 2013.
[372] Bruce Tompkins. *Lean Thinking for the Supply Chain* http://www.tompkinsinc.com/publications/competitive_edge/articles/06-04-Lean_Supply_Chain.asp. Accessed January 2, 2013.

improvement (*kaizen*) and disseminates information by decentralized means.[373]For this reason, "computing intelligence is dispersed throughout the enterprise, rather than being centralized in a host computer only."[374] Continuous improvement implies flexible work teams and computer-programmable machinery, all features of lean production. It also means that intra- and inter-firm departments must be functionally integrated. Importantly, "information technologies now aid in breaking down the bureaucratic barriers separating design, production, marketing, and administration functions."[375] Finally, lean production is founded upon sub-contracting arrangements in which each firm focuses on its "core competencies."[376] This implies the development of complex inter-firm supply chains, and the constant scouring for new, more efficient suppliers. To this end, firms use various benchmarking techniques. ICT facilitates all of these processes, and the dramatically falling price of business computing over the past decade has helped its dispersion. For instance, in 1997 the price of computers and peripherals for business stood at 102.4 on Statistics Canada's Machinery and Equipment Price Index (MEPI). In 2008, it stood at 36.8. By 2011, the price of business computing had fallen to 29.8 on the MEPI. That's a decrease in the costs of business computer equipment of 71 percent in fewer than fourteen years.[377]This decline was followed by a decline in communications equipment by 34 percent in the same period. This helps to explain the extensive proliferation of computers and communications equipment in all walks of

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[373] Thomas Houy, "ICT and Lean Management: Will They Ever Get Along?" MPRA Paper No. 2502 (September, 2005), http://mpra.ub.uni-muenchen.de/2502/: 64. Accessed on January 2, 2013.
[374]Smith, *Technology and Capital in the Age of Lean Production,* 37.
[375]Smith, *Technology and Capital in the Age of Lean Production*, 41.
[376] Smith, *Technology and Capital in the Age of Lean Production*, 38-39.
[377] CANSIM Series v41232478

business life. The most important consideration for us, however, is how ICT facilitates the flow of information and semi-finished products within and between firms. Hence, this section will examine the effects of ICT, JIT and *kanban*on inter-firm supply chains.

According to the principles of JIT "the aim of an information system is to indicate at all times and to each operator what type of piece to produce, when to produce it and in what volume."[378] In this sense, the operational information flowing through ICT channels concerns production processes, work standards and ways to increase productivity.[379]When information arrives regarding demand for a particular product, this information is

> transmitted back to final assembly; requests for the different parts required for final assembly are transmitted back to the sites where partially finished goods are produced; and so on, all the way back to the transmission of requests to suppliers to deliver raw materials and other inputs to the plant. Each step in the production and distribution process completes its task on an as needed basis, that is, "just-in-time" for the results to be used by the next stage in the process.[380]

In the *kanban* system, a label is placed on batch pieces. The document contains the quantity of articles in the container, its destination, a description of said articles, its location in the storage area, information concerning its route and so on.[381] The "aim of this label is to send a signal that enables the company to produce only parts to replace parts which have just been used and in the order of their use." In this way, operators are informed "about what he or she must do, when this must be done and the volumes

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[378]Houy, "ICT and Lean Management", 59.
[379]Houy, "ICT and Lean Management", 60.
[380] Smith, *Technology and Capital in the Age of Lean Production,* 39-40.
[381]Houy, "ICT and Lean Management", 61.

required."[382] All the while, ICT allows for the sharing of information between operators and managers to ensure problems are corrected quickly. Interestingly, however, traditional *kanban*labelling is often considered adequate for internal operations, and as a result, several businesses have resisted moving to an electronic system. Nevertheless, throughout the late 1980s and 1990s countless firms adopted electronic *kanban*, including Rover in 1986, General Motors in 1990 and Toyota in 2000. BMW now uses the technology as well. These businesses use Radio Frequency Identification Technology (RFID), wireless communication systems and bar-codes in production batch identification instead of the old labelling system. Significantly, this technology is more often applied in *inter-firm* transactions rather than within any individual firm, as in the case of Toyota, which limited the technology "only to pull the materials from the suppliers." Indeed, as of 2008 Toyota still used"card-based kanbans in its own manufacturing operations."[383]

The advantages of the electronic *kanban*system involve removing the problems of lost cards, eliminating the unproductive activity of handling cards, on-time delivery of demand needs, quick modification of electronic *kanban*schedules when applicable, minimization of material shortages, increased transparency of the supply chain and better analysis of supplier efficiency.[384] To be sure, electronic *kanban* allows for quicker reaction times to changes in the state of production system and the supply chain. In

[382]Houy, "ICT and Lean Management", 61.
[383]Kouri*et al.*, "The Principles and Planning Process of an Electronic Kanban System", 100.
[384]Kouri*et al.*, "The Principles and Planning Process of an Electronic Kanban System", 101.

combination with multi-functional machines and a flexible workforce, the result is increased responsiveness of supply to demand.

Another important application of computers to lean production is in the field of planning. Enterprise Resource Planning (ERP) software deals with production scheduling, the automatic receipt and delivery of products, and the monitoring of inventory movements. It is also applied to manage capacity and finances.[385] Computer software is central to smoothing out production and creating small inventories so business can readily meet demand as it arises. Houy notes that "the size of batches and, accordingly, the breakdown of the mix is determined by a formula which, linked to storage costs and the cost of changing the production run, determines the optimal size of the batches to be produced."[386]ICT and computer software like ERP are the solution to these complex real-time calculations.

Additionally, ICT allows firms to track final consumer behaviour and demand in all of its nuances. This is important because "the greatest profits today are won from tailoring goods or services to the specific needs of particular customers in a way that cannot be easily duplicated by others."[387] To be sure, competition over market share is increasingly taking place on the basis of customer-specified product differentiation. One only need think of the user-specific advertisements on Facebook or Google+ and the continuous polling of the user base to see the role of ICT in tracking consumer tastes. These tracking technologies, in combination with tighter relationships between suppliers

[385]Houy, "ICT and Lean Management", 66.
[386]Houy, "ICT and Lean Management", 67.
[387]Smith, *Technology and Capital in the Age of Lean Production*, 40.

and receiver firms, allow for faster reaction times to shifts in consumer demand. Moreover, the forms of work organization and types of technology involved in lean production allow firms to respond more quickly to new information as it arrives. As a result "a greater range of products is offered to consumers than in Fordism, and product runs tend to be of significantly shorter duration."[388]

Furthermore, software is used for forecasting future needs. Although this runs counter to the "philosophy" of lean production (i.e. the idea that the "pull" of demand ought to stimulate supply), businesses see forecasting as necessary. Moreover, a firm may need to "push" to create demand. Indeed, auto manufacturers are extensive users of lean production methods, but they are also intensely involved in advertising campaigns. This is an important limitation of JIT in capitalist society. It means that investment decisions (for both circulating and fixed capital) are not governed solely by the "pull" of demand in existing supply chains.So, while JIT reduces some discrepancies associated with supply and demand, it cannot eliminate them entirely. For, to paraphrase Keynes, businesses ultimately make investment decisions in a world of radical uncertainty.[389]The basic anarchic character of production in capitalism prevails even amongst JIT firms. Let us now turn to some of the limitations of JIT-ICT in smoothing out inventory investment.

**Limitations of JIT-ICT and the business cycle**

There are a number of limitations to JIT production and distribution systems. For instance, situations may arise in which the buyer firm exaggerates its future need for unfinished products from the supplier firm because it anticipates but cannot be sure of

[388]Smith, *Technology and Capital in the Age of Lean Production*, 39.
[389] J. M. Keynes, *The General Theory of Employment, Interest and Money* (London: Harvest, 1964): 148.

increasing demand. The supplier firm, anticipating this behaviour, may produce less than the quantity initially requested, to ensure that its inventories do not become overstocked. Therefore, though the range for error may be reduced owing to JIT-ICT, it is still present.[390] This situation may result in too much or too little supply. Under- and over-shooting persists even in the context of JIT production and distribution.

The situation above may be offset by the power relations inherent in lean production sub-contracting systems. Suppliers compete for contracts from assembling firms. Hence, assembling firms have a certain amount of control over their supply and the conditions of its provision. If the former is unsatisfied with the quantity or quality of parts shipped, the supplying firm may lose its contract in the next round. Indeed, a significant reduction in the costs of production, including for example lower inventory storage costs, lower computing costs and so on, have significantly reduced the barriers to entry for lower-tier production. This is reflected in the growth of "archaic forms of labor organization common in the nineteenth century" like homework.[391] To be sure, competition is fierce and lower-tier firms have an interest in meeting the specifications of the assembling firm.

In the preceding sections we examined the theory of the business cycle, the theoretical linkages between the supply chain, JIT, ICT and the limitations of the latter. In the following section we will examine the empirical evidence for the integration of the supply chain, ICT usage and the smoothing out of the inventory investment cycle.

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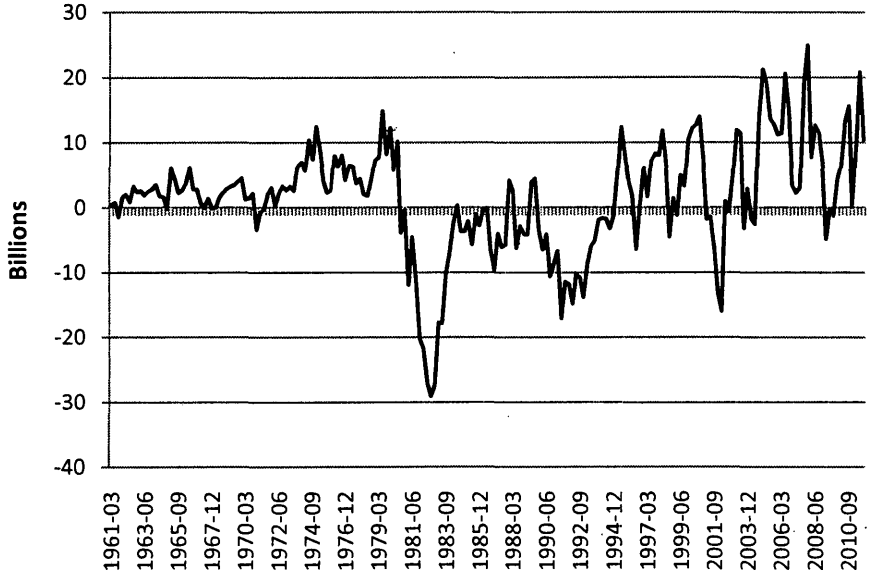
[390] Guido Voigt, *Supply Chain Coordination in Case of Asymmetric Information: Information Sharing and Contracting in a Just-in-Time Environment* (New York: Springer, 2011): 37-38.
[391] Kim Moody, *Workers in a Lean World: Unions in the International Economy* (New York: Verso, 2001): 97.

**Has the introduction of JIT-ICT led to a smoother pattern of growth? Empirical evidence**

Figure 48 below demonstrates that investment in inventories within each yearfluctuated much more considerably in the period prior to 1990-92 than in the period after. Shorter variations in inventory investment are also noteworthy, as well as lower overall levels of investment.

**Figure 48. Inventory investment (2002 dollars)**




Source: CANSIM Series v21603805

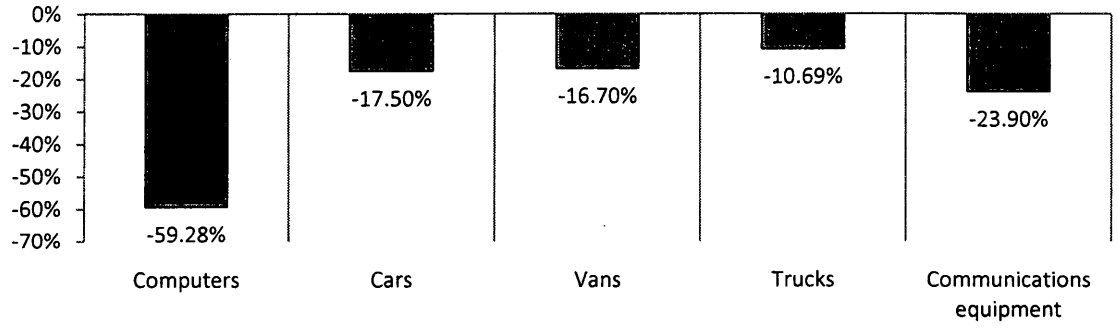
Longer cycles are notable in the period after 1990-92 with less frequent interruptions and higher overall levels of investment. The growing mass of profit contributed to the character of growth by allowing for a greater mass of overall investment in the period after the Great Canadian Slump. Greater profitability (reflected in a high average MEC) and more tightly integrated supply chains resulted in the smoother character of growth in

this period. This pattern of investment is reflected in the rate of GDP growth as well, as we have seen above.

**ICT, JIT and the supply chain in Canada**

In the previous chapter, I outlined how the crisis of 1990-92 played a pivotal role in restarting accumulation on a new foundation. Notably, in this period, technologies essential for the reorganisation of production and distribution became increasingly cheaper. The cheapening of computer, communications and transportation equipment eased firm reorganisation along the lines of lean production. Figure 49 below demonstrates the degree to which the essential elements of lean production have become cheaper throughout the period in question. In the fourteen-year period 1997-2011 for which these data are available, the price of business computing declined by almost 60 percent, the price of transportation vehicles by 10-18 percent and communications equipment by almost 24 percent. Importantly, contrary to equipment intimately bound up with JIT-ICT, the prices of most other machinery and equipment in fact *rose* in this period. Let us look more closely at the place of these elements of lean production in Canadian society.

**Figure 49. Percent Change in Machinery and Equipment Price Index (MEPI), 1997-2011**




Source: CANSIM Table 327-0016

To get a sense of the increasing importance of transportation for inter-firm exchanges, it is notable that total monthly railway tonnage rose by 27.17 percent between 1999 and 2007.[392] Moreover, post-secondary college enrolment in transportation studies increased by 56.7 percent between 1990 and 1998.[393] Between 1993 and 2011, the absolute number of transport and equipment operators rose by 32 percent (from 512,200 to 677,100). Interestingly, in the initial phase of JIT-ICT restructuring, the number of employees dedicated to transportation and warehousing as a percentage of total employed workers rose from 4.68 percent in 1992 to 5.36 percent in 2000. In other words, transportation and warehousing jobs rose as a share of total jobs in Canada. After 2000, however, the number began to decline. Nevertheless, truck transportation contribution to GDP has risen consistently from 1.14 percent in 1997 to 1.34 in 2011. Overall, these trends reflect the rising importance of transportation subsequent to the 1990-92 crisis.

[392] CANSIM Series v74870
[393] CANSIM Series v1445326

Cheaper access to information communication technology and the requisite skillsets required to run it was equally important for Canadian JIT systems. Notably, enrolment in mathematics and computer science increased by an astounding 132 percent between 1990 and 1998, whereas enrolment in electronic and electrical technologies increased by 29 percent in the same years.[394] This rising trend was the same in universities as in colleges, and continued until the IT bubble burst in 2001.[395] This reflects the increasing importance of ICT in the Canadian economy in the period in question.

In 2004 the OECD reported that Canada had one of the highest rates of ICT diffusion in the world (along with the U.S., New Zealand, Australia, the Nordic countries and the Netherlands).[396] However, what interests us here is not the *general* diffusion of ICT throughout Canadian society, but the role of ICT in integrating supply chains and reducing discrepancies between supply and demand. In Canada, large ICT networks are in place throughout the business sector. In fact, the rate of accumulation of ICT-based fixed capital has significantly outpaced the rate of accumulation of general machinery and buildings and structures from the early 1980s until today (see Figure 50 below).

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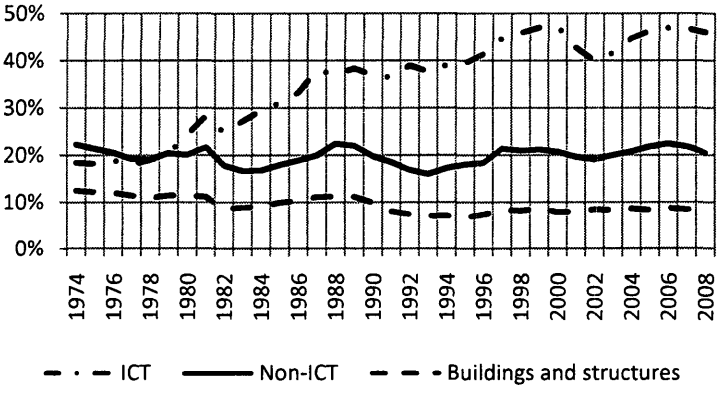
[394] CANSIM Series v1445296 and v1445311

[395] CANSIM Series v31215400

[396] OECD, *The Economic Impact of ICT: Measurement, Evidence and Implications* (Paris: OECD Publications and Information Centre, 2004): 26.

**Figure 50. Rate of accumulation of machinery and equipment and buildings and structures**




Source: CANSIM Table 383-0025

According to a 2009 Industry Canada survey, 13.5 percent of all firms used "advanced information and communication technologies" for information integration and control, whereas 28 percent used them for communication. In manufacturing alone, these figures stood at 19.7 and 23.7 percent, respectively.[397] Importantly, in 2000 Statistics Canada found that 42.81 percent of firms used the Internet to access the databases of suppliers.[398] According to a 2007 Statistics Canada survey, 86.66 percent of Canadian enterprises used the Internet for business, 76.68 percent used wireless communication, 21.22 percent used an internal network and, most significant for our purposes, 15.64 percent used Electronic Data Interchange (on the Internet).[399]

The EDI indicator is of particular importance for our analysis, as it is a useful proxy for the use of ICT on the supply chain. Importantly, however, the statistics are not

[397]Industry Canada, "Survey of Innovation and Business Strategy 2009", http://www.ic.gc.ca/eic/site/eas-aes.nsf/eng/h_ra02092.html.Accessed January 2, 2013.
[398] CANSIM Table 3580013
[399] CANSIM Table 3580007

available for EDI usage on non-Internet channels. In this sense, we can expect EDI usage to be greater than indicated in these figures. The low percentage of firms that use EDI reflects the fact that principally large firms are more likely to employ the technology. The latter require the technology because of the scope and scale of their operations.[400] They "use the technologies to redesign information and communication flows within the firm, and to integrate these flows throughout the production process."[401] Small firms, on the other hand, are less likely to use ICT for these purposes. To be sure, large firms are more likely to use EDI than small firms.[402] It is notable that large firms make up a smaller percentage of total businesses in the Canadian economy than smaller firms, but employ more people and have a larger impact on private sector GDP. According to a 2011 Statistics Canada report, small private businesses (here defined 1-99 employees) made up 98% of businesses in Canada, whereas medium to large private firms (100-500+ employees) made up 2% of Canadian businesses. However, whereas small businesses employed 48.3 percent of private sector employees, medium and large firms employed 51.7 percent.[403] In terms of private-sector GDP, in 2005 small firms contributed 41.9 percent, whereas medium and large firms contributed 58.1 percent.[404] For these reasons, and despite the relatively small number of large- and medium-sized firms, the latter play

[400] Large firms are more likely to integrate functional departments internally as well. The *Workplace and Employee Survey Compendium* for 1999 produced by Statistics Canada shows that 53.2 percent large firms (500+ employees) increased internal integration in 1998, whereas only 11.0 percent of very small firms (1-19 employees) and 25.2 percent of small firms (20-99) did so. See Statistics Canada, *Workplace and Employee Survey Compendium 1999*, http://publications.gc.ca/Collection/Statcan/71-585-X/71-585-XIE1999001.pdf. Accessed January 2, 2013.

[401] Dirk Pilat, "The ICT productivity paradox: Insights from micro data," OECD Economic Studies, No. 38 (2004): 55.

[402] Pilat "The ICT productivity paradox: Insights from micro data", 55.

[403] Statistics Canada, "Key Small Business Statistics", http://www.ic.gc.ca/eic/site/061.nsf/eng/Home.Accessed January 2, 2013.

[404] Statistics Canada, "Key Small Business Statistics"

a disproportionality larger role in the Canadian economy. Therefore, since large business is more likely to be a user of EDI, the relatively small number of firms using EDI (15.64 percent) should not lead us to underestimate the importance of this technology to the Canadian economy.[405]

Throughout the period 1993-2008, firms have become increasingly reliant on external suppliers. In 1998, large firms were 24.9 percent more dependent on external suppliers than in the previous year, whereas firms with 20-99 and 100-499 employees were 20.3 and 24.9 percent more dependent, respectively. Three years later, in 2001, large firms reported being 16.4 percent more reliant than the previous year, whereas firms with 20-99 and 100-499 were 11.1 and 12.5 more dependent than the previous year, respectively.

A limited measure of the degree of inter-firm integration via sub-contracting networks is captured in Table 6 below for the years 2001-2003. The latter measures the percentage of service-oriented business units whose operations were part of a larger firm. In other words, it measures the number of service-based firms who were sub-contracted out to by a larger firm. The figures demonstrate that a significant number of firms belonged to an inter-firm production network.

[405] In any economy there will be a mix of traditional JIT and ICT-enhanced JIT firms. Therefore, the application of EDI is not an indicator of the total number of JIT firms.

**Table 6.Percentage of business units whose operations were part of a larger firm, 2001-03**

| Industry | Percent |
|---|---|
| Rail transportation | 73.3 |
| Water transportation | 62.5 |
| Airport operations | 48.8 |
| Geophysical surveying and mapping services | 48 |
| Scientific research and development services | 46.2 |
| Information and communication technology (ICT) service industries | 40.3 |
| Other machinery, equipment and supplies wholesaler-distributors | 39.6 |
| Air transportation | 38.8 |
| Testing laboratories | 35.1 |
| Other support activities for mining | 32.7 |
| Contract drilling (except oil and gas) | 32.1 |
| Truck transportation | 30.7 |
| Management, scientific and technical consulting services | 30.2 |
| Engineering services | 29.4 |
| Port and harbour operations | 27.6 |
| Industrial design services | 26.6 |
| Surveying and mapping (except geophysical) services | 25.6 |
| Support activities for forestry | 11.7 |

Source: CANSIM Table 358-0027

Unsurprisingly, given the growing importance of transportation in the context of more complex supplier networks, the most significant sub-contracting occurred in rail and water transportation (77.3 and 62.5, respectively). This was followed by airport operations (48.8) and geophysical surveying and mapping services (48). To be sure, those industries with the highest percentage of firms whose operations were part of a larger firm were those responsible for transportation in one way or another. To repeat, this is consistent with the growing importance of transportation in ICT-JIT production and distribution processes. Unfortunately, given our limited empirical data, it is not possible

to determine conclusively to what extent integration with external suppliers has increased in recent years, but it is likely significant.[406]

In this context, inter-firm EDI messages are important because they replace bills of lading and allow the dynamic sharing of JIT schedules with suppliers. This technology is used by JIT producers to dynamically send pull messages to suppliers and, importantly, this has proven to reduce discrepancies in shipments. Indeed, "suppliers can promptly react to messages from their customers since the internal systems of suppliers can adjust to customer requests dynamically." Moreover, "the higher degree of electronic coupling helps the synchronizing of material flows." To be sure, suppliers who employ ICT in receiving shipment schedules and who integrate that information into their production systems have "sharply lower shipment errors."[407]In this way, JIT-ICT "forges a stronger alliance between a firm and its suppliers, and makes it easier to change production specifications."[408]

In addition to EDI, it is important to emphasize the role of geospatial technology in supply chain management (SCM) as well. Indeed, geospatial technology was used by 15.2 percent of management consulting service business units in 2003.[409] This highlights the important role of geospatial technology in SCM. Above we have seen the growing

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[406] Statistics Canada, *Workplace and Employee Survey Compendium* 1999 and 2001, http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=71-585-X&chropg=1&lang=eng. Accessed January 2, 2013.
[407]Srinivasan, *et al.* "Impact of Electronic Data Interchange Technology on JIT Shipments."*Management Science* 4, No. 10 (Oct. 1994): 1292.
[408] Harvey J. Krahn, Graham S. Lowe and Karen D. Hughes, *Work, Industry and Canadian Society* Sixth Edition (Toronto: Nelson, 2011): 274.
[409] CANSIM Series v32726904

importance of transportation in JIT-ICT. Geospatial technologies allow for the better coordination of just-in-time shipments.

In addition to its contribution to coordinating the production and distribution of semi-finished and finished goods, the application of ICT to management practices also allows for a reduction in the size of management bureaucracies and the costs associated with them. For instance, in 1995management made up 9.4 percent of the total labour force. However,by 2011 it had declined to 8 percent. In fact, management wages as a percentage of total wages declined from 8.5 percent in 1997 to 6.7 percent in 2011.[410] This not-unsubstantial decline contributed to the rise in the rate of profitability discussed in the previous chapter. It was made possible by JIT work organisation and developments in ICT, especially surveillance and raw computing power.

Despite the decline in management as a percentage of the total labour force, the number of managers along the supply chain has grown by over 548 percent since 2001 (See Table 7). This likely represents the growing importance of SCM relative to traditional forms of management, a result of the increasing importance of JIT-ICT production and distribution systems.

**Table 7. Workers on the Supply Chain**

| **Percentage of total supply chain employment** | **2001** | **2010** |
|---|---|---|
| Manufacturing | 33.34% | 28.46% |
| Wholesale trade | 16.01% | 19.57% |
| Retail trade | 16.20% | 13.12% |
| Transportation and warehousing | 14.78% | 14.07% |
| Management of enterprises | 0.03% | 0.18% |

Source: Canadian Supply Chain Sector Council, http://cscsc.rdaglobal.com

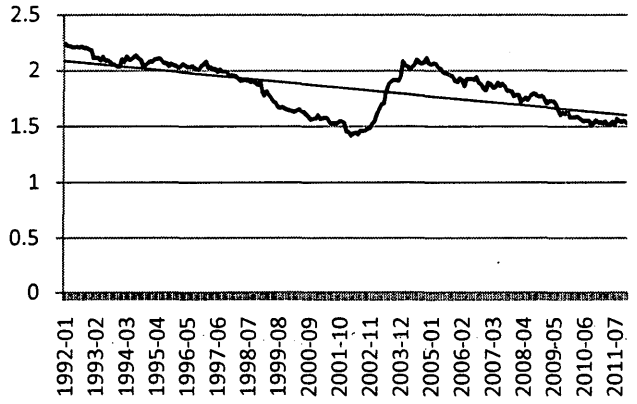
[410] CANSIM Series v2222249 and v2222254

However, the largest number of workers on the supply chain remains by far in manufacturing, wholesale trade, retail trade, and transportation and warehousing.[411] It is notable that in each of these employment categories (except wholesale trade) employment has declined since 2001, likely the result of mechanisation and computerisation.

To measure the importance of JIT-ICT in organising production, I have developed some simple measures. For instance, we can examine the raw materials to goods in process ratio ($x$). As its title suggests, this indicator measures the value of raw materials, fuel, supplies and components ($M$) over the value of goods or work in process ($IP$). Hence, it can be represented by the simple formula: $x = M/IP$. The increasing importance of JIT-ICT in organising production is reflected in the falling raw materials-to-goods in process ratio. This ratio fell from 2.24 in 1992 to 1.41 in 2002. It subsequently rose – thanks to the bursting of the IT bubble – and then fell again to 1.52 in 2011. See Figure 51 below.

[411] Calculated from industry data provided by the Canadian Supply Chain Sector Council, http://cscsc.rdaglobal.com/.Accessed January 2, 2013.

**Figure 51. Raw materials to goods in process ratio**



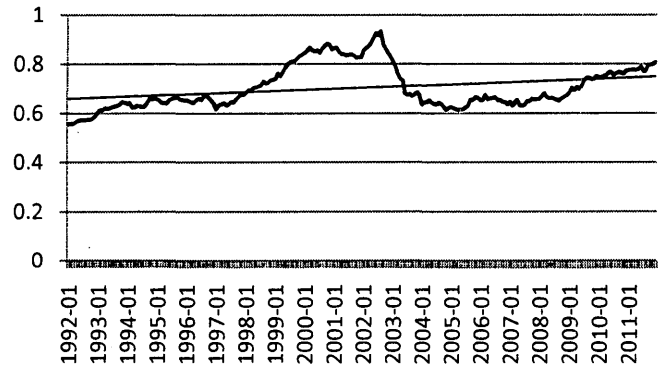

Source: CANSIM Series v801800 and v802263

This means that there is a tighter linkage between the demand for raw materials and goods production. Raw materials are increasingly being produced "just in time" for use in production. Hence, there are fewer raw materials idling in inventories. To paraphrase Harvey, JIT-ICT keeps more "value in motion."[412] The decline in the raw materials-to-goods in process ratio reflects this change.

The second phase of the production process is represented by the goods in process-to-finished goods ratio ($y$). This ratio measures the value of goods or work in process ($IP$) over finished goods manufactured ($FG$). Hence, $y = IP/FG$. This ratio rose secularly throughout the period (again with the exception of the IT bubble bursting) from 0.56 in 1992 to 0.81 in 2011. See Figure 52 below.

[412]David Harvey, *The Limits to Capital* (New York: Verso, 2006): 71.

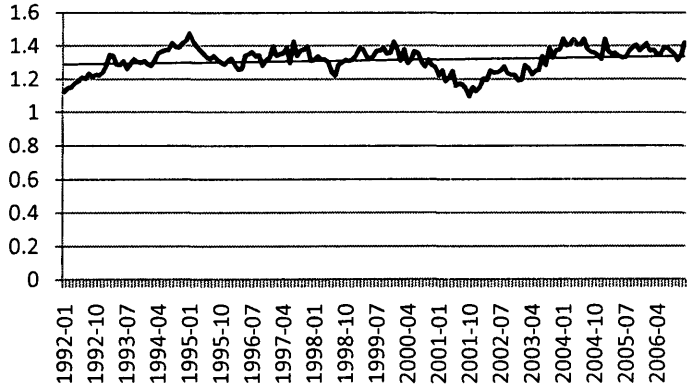
**Figure 52. Goods in process to finished goods ratio**




Source: CANSIM Series v802263 and v802726

This means that the number of goods in processhas been rising relative to finished goods. Again, this is a manifestation of JIT-ICT. Relatively fewer finished goods are idling in warehouses. Instead, finished goods produced are sold "just in time" for final consumption. Hence, both of these supply-chain ratios, $x$ and $y$, indicate tighter supply-chain integration in Canada since the early 1990s. This is also reflected in the stable new orders-to-inventory ratio below.

**Figure 53. New orders to inventory ratio**

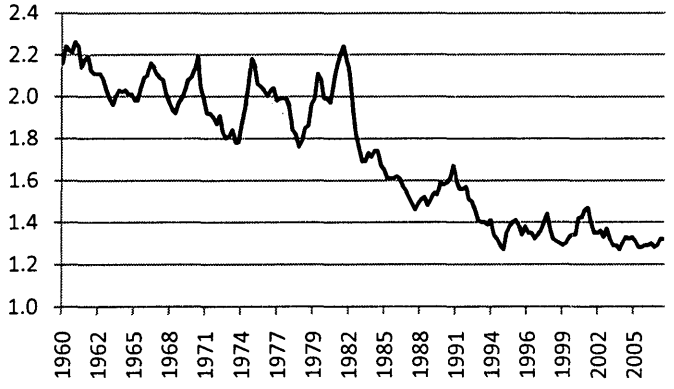



Source: CANSIM Series v800913, v802726 and v802263

The new orders-to-inventory ratio stayed relatively stable during the period in question and averaged 1.3. In other words, for every item in inventory (finished and semi-finished goods) there were 1.3 new orders. This highlights the relatively stable inventory investment environment in this period. Firms were ordering (i.e. investing) at a more-or-less stable rate throughout the period.

The fact that the above ratio remained stable, in the context of a declining raw material-to-goods in process ratio and a rising goods in process-to-finished goods ratio, implies that there was a controlled trend to JIT. In value terms, this means that the quantity of value being worked upon increased as a share of the total magnitude of value in motion. Put differently, it means that less constant capital (in its circulating form) is caught up in the productive process. This implies both a lower turnover time and a higher rate of profit, as was discussed in Chapter 1. Less constant capital is being used unproductively at any given point in time. The stability these changes created is further reflected in the inventory-to-shipment ratios below.

**Figure 54. Inventory-to-shipment ratio**




Source: CANSIM Table 304-0014

In Figure 54 above, it is clear to see that fluctuations in the inventory-to-shipment ratio declined significantly in the period after the 1990-92 crisis. To be sure, fluctuations in this ratio were much smaller in the post-rather than the pre-JIT period. Not only were the fluctuations smaller, but the absolute level of inventories (relative to shipments) was lower. This means that firms aimed for lower inventory levels than in previous periods. Low levels of inventory can cause problems if there is in fact a disruption in production. The lack of an inventory buffer means that large firms are *dependent* upon the smooth flow of parts in order to remain competitive (i.e. to secure its market share). Therefore, if one firm fails to deliver for whatever reason, the large firm must find another provider quickly or suffer an interruption in its production process. At the same time, the flexibility of production – both in terms of the fixed capital employed and the pliancy of labour – allows for sudden adjustments to increased demand by individual supplier firms. Firms are more responsive to increases in demand and this further facilitates switching supplier firms when necessary. Moreover,because inventory levels are low, it will take less investment to get inventory levels back up to their desired levels in the case of disruption. As a result, the quantity of funds borrowed from credit intermediaries to get inventory levels back up will be smaller during each fluctuation. This has important implications for the business cycle, as we will see below.

**JIT-ICT and its effects on the inventory investment cycle**

The result of the above processes is that the debt drag described by Anwar Shaikh will take longer to come into effect, or it might not at all come into effect in the context of an ascending curve of development in which firms are already self-financing*and*

deleveraging. Moreover, as I have shown in the previous chapter, because this phase of capitalism in Canada was characterised by a growing rate and mass of profit, the inventory investment cycle was further modified by the availability of investment funds. To be sure, the accumulation cycle intersects with the inventory investment cycle by determining the interest rate, the cost of borrowing. If the rate of profit is growing, interest rates fall because access to loanable funds increases. Therefore, the inventory investment cycle itself becomes longer because it can sustain debt-based inventory investment for a longer period (since it takes longer for financial leakages to take effect).

To sum up, JIT in combination with ICT has reduced discrepancies between demand and supply and, in this way, has reduced disruptions to the supply chain. The reduction in discrepancies has reduced internally generated shocks to the economy and smoothed out inventory investment. In combination with high MEC levels, this has contributed tosmoothing out the inventory investment cycle by reducing the financial burden associated with inventory investments. The result is a smoothing out of the inventory investment cycle.

After having examined the long upturn of 1993-2008 and the reasons for stable and smooth accumulation in this period, we now turn to an analysis of the banking sector in Canada in relation to the Great Recession of 2008-09.

## Chapter 5: Canadian Banking and the Global Financial Crisis of 2008-09

The Global Financial Crisis of 2008-09 punctuated one of the longest and steadiest periods of economic growth in Canadian history (1993-2008). As is well documented, the financial crisis originated in the U.S. real estate market and subsequently spread across the globe when international money markets froze up.[413]The effects of the crisisin Canada were compounded by its strong trade and financial linkages to the United States through NAFTA. In fact, owing to the recession, exports to the U.S. fell by 28% (or $105 billion CAD) in just one year.[414] Yet despite the country's "open market" character and close trade ties to the poorly-performing U.S. and European economies, Canada was the first G7 nation to recover from the recession. Indeed, it continues to lead the G7 countries in terms of real economic growth. Thus, in many ways, Canada has emerged as the "Great Exception" to enduring stagnation and instability amongst the world's high-income countries.

Several explanations have emerged to account for Canada's puzzling economic stability in recent years. Some thinkers point to government regulation of the financial sector or timely fiscal intervention in the economy.[415]Others suggest just the opposite: relatively low levels of stimulus and years of fiscal prudence kept the economy afloat in

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[413]Costas Lapavitsas, et al. *Crisis in the Eurozone.* (Brooklyn, NY: Verso, 2012).

[414]"Annual Statistics on Merchandise Imports and Exports, by Country and Commodity, Recorded on a Customs Basis," *Department of Foreign Affairs and International Trade*, 2012, http://www.international.gc.ca/economist-economiste/assets/pdfs/Data/facts-fiches/PFACT_Annual_Merchandise_Trade_by_Country-ENG.pdf

[415] Kevin Lynch, "Avoding the Financial Crisis: Lessons from Canada." *Policy Options,IRPP* (May 2010); Jean Boivin, "The 'Great' Recession in Canada: Perception Vs. Reality." *Bank of Canada*, March 28 2011, http://www.bankofcanada.ca/wp-content/uploads/2011/03/sp280311.pdf.

spite of global economic uncertainty.[416]Still others look to growing appetites abroad – especially China – for exports like oil, gas and minerals.[417] In this chapter, I challenge the claim that the concentration of Canada's banking sector lay at the heart of the country's positive economic performance during and subsequent to the Great Recession of 2008-09. From this perspective, a high degree of bank concentration reduced competition. Owing to greater pricing power, the big banks were able to increase profit margins at the expense of businesses and consumers. In turn, growing profits stabilized financial institutions by providing "a buffer against fragility" and "incentives against excessive risk taking."[418] As a result of these processes, the argument runs, the concentration of the banks made possible the uninterrupted flow of business and consumer credit when it was needed most. In part, this was reflected by low and stable interest rates throughout the course of the global financial turmoil.[419]For instance, Porter notes that "the Canadian bank market structure has contributed to consistent profitability of the industry, and while this has been criticized as harmful to the interests of consumers it also helped with bank resilience during the crisis."[420] Contrary to this position, I argue that the strength of the economy was not a function of the stability of the banks; rather, the stability of the banks was a function of the strength of the economy. In particular,

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[416]DavidLee, "How Canada Escaped the Global Recession." *Ludwig von Mises Institute*, August 29, 2011. http://mises.org/daily/5583/How-Canada-Escaped-the-Global-Recession.
[417]Jim Stanford, "The Global Economic Crisis – Part 1," *Canadian Dimension*, January 5, 2012.
[418] T. Beck, D. Coyle, M. Dewatripont, X. Freixas, and P. Seabright, *Bailing out the banks: reconciling stability and competition.* (London, UK: Centre for Economic Policy Research (CEPR), 2010), 17.
[419] "No Evidence of Canadian Credit Crunch," *The Vancouver Province*, November 21, 2007. http://www.canada.com/theprovince/news/money/story.html?id=767e9b7f-7262-45e9-9346-ff3aa2de6f21.
[420] Tony Porter, "Canadian banks in the financial and economic crisis." Paper prepared for presentation at the Policy Responses to Unfettered Finance Workshop, *North-South Institute*, June 8-9, 2010. http://www.nsi-ins.ca/wp-content/uploads/2012/10/2010-Canadian-Banks-in-the-Financial-and-Economic-Crisis.pdf

conditions of high profitability and strong business investment over the preceding fifteen years stabilised bank assets and, consequently, the financial system. To be sure, in order to more accurately explain the real basis for the stability of the Canadian economy in recent years, we must examine the dynamic historical processesat work during the long fifteen-year period of capital accumulation preceding the Great Recession.

In the first section of this chapter, the most important features of the Canadian banking system are introduced and analysed. I demonstrate that the Canadian banks considered in isolation from the greater economy were in fact quite unstable in the fifteen years leading up to the Great Recession of 2008-09, as evidenced by high levels of leverage. The second section demonstrates that the resilience of the banks in the wake of the recent global financial crisis can be accounted for by "re-embedding" them in the historical dynamics of capitalist accumulation in Canada. I argue that the stability of the banking system during and subsequent to the crisis was a function of the stability of the economy as whole – i.e. part of a long period of general stability in Canadian capitalism. To this end, I highlight the important theoretical and empirical linkages between bank asset stability and the economic environment in which they were situated. I show that high business profitability during this period kept bank assets stable, thereby allowing these institutions to escape the brunt of the financial meltdown.

**The structure of Canadian finance and the stability of the banks**

The stability of the banking sector is conventionally understood to be a function of its concentration. According to this view, lower levels of competition give banks greater pricing power, thereby improving profit margins and stability. This section makes the

argument that Canada's banks in fact appear quite unstable when considered in isolation from the greater economy.To determine the veracity of this view, we must first take stock of the structure of the Canadian banking system.

Canada's banking sector has two notable features that differentiate it from other liberal market economies. First, it is considerably insular. Structurally, it is difficult for smaller foreign banks to break into the market because of the pre-existing nation-wide branch banking system. Moreover, legislation particular to the Canadian banking market prevents both domestic and foreign takeover of existing banks.The "widely-held" rule prohibits any single shareholder from owning more than twenty percent of the voting rights in a large bank. This legislation strengthens the sector's insularity. Second, Canadian banking is highly concentrated. For instance, although there are 77 banks operating in Canada, the five largest banks hold approximately ninety percent of total bank assets.In comparison, in the U.S. there are over 8,000 banks and the assets of the top five comprise less than thirty percent of total banking assets.[421]

These structural features have been the basis for the argument that Canada's banking system is uncompetitive and exceptionally profitable. However, the error lies in assuming a somewhat uncomplicated relationship between the quantity of banks in operation and the competition to which these banks are exposed. There has actually been little evidence to support the idea that large firms can maintain pricing power

[421] Jason Allen, Walter Engert, and Ying Liu, "Are Canadian Banks Efficient? A Canada-U.S. Comparison," *Bank of CanadaWorking Paper2006-33*, 2006: 3, http://www.bankofcanada.ca/wp-content/uploads/2010/02/wp06-33.pdf.

(andtherefore higher profit rates) in the long run.[422]In Canada, fewer banks control more assets, but this does not translate into a low level of competition in the sector. To the contrary: the capacity to compete heightens as firms get larger and better at competing.[423]In other words, concentration and centralisation themselves are weapons of competition.[424] In this regard, because the "Big 6" are highly competitive and dominate the Canadian banking market, they are not put off by new, small foreign entrants. For this reason, the big banks are the greatest proponents of foreign entry into the Canadian market. The hope is that the easing of restrictions on foreign entrants will gain them access to external markets.[425] It is precisely the imperative to compete and the uncertainty that firms will be able to maintain their current market shares that forces them to seek out new markets. This implies that firms, including banks, will in fact continue to seek to reduce costs for their consumers.[426] I shall further illuminate the competitive character of the Canadian banking sector below in my discussion of historical interest rate movements as well as the shifts in the composition of bank assets and liabilities accompanying the most recent phase of capital accumulation in Canada (1993-2008). First, however, let us more closely examine the structure of the banks.

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[422]Jamee K. Moudud, *Strategic Competition, Dynamics, and the Role of the State: A New Perspective.* (Northampton: Massachusetts, 2010), 51.
[423] David Harvey, *The Limits to Capital.* (Brooklyn: Verso, 2006), 144-147.
[424]Karl Marx, *Capital Volume I.* (New York: Penguin Books, 1990), 762-870; Henryk Grossmann, *Aufsätze zur Krisentheorie.* (Frankfurt: VerlagNeueKritik, 1971), 138.
[425] Murray Cooke, *Banking on Mergers: Financial Power versus the Public Interest.* (Toronto: Centre for Social Justice, 2005), 50.
[426]Jamee K. Moudud, 'The hidden history of competition and its implications'. In Jamee K. Moudud*et al.* (Eds.) *Alternative Theories of Competition: Challenges to the Orthodoxy* (New York: Routledge, 2013).

**Leveraging**

Leveraging is a revealing indicator of competitive exposure. In an effort to compete, banks will "finance more and more of their business with borrowed funds" in order "to expand the scale of their operations."[427] This is especially so in the context of difficulties procuring deposits. Significantly, Canadian banks rank amongst the most highly leveraged in the world. From this perspective, the banks appear both competitiveand structurally unstable.

Indeed, bank leveraging is a common indicator of bank instability. We can measure leverage by means of the tangible common equity to total tangible assets ratio (TCE ratio).[428] Banks finance loans by borrowing. In other words, banks take deposits and lend them out to workers and businesses. If a bank loses an asset (e.g. if a loan fails), it must raise funds to pay back the depositors from whom the funds were borrowed to make the loan. Selling common equity is one way to raise funds (others include selling bonds, preferred equity and so on). TCE is the quantity of equity available to pay back depositors in the event that the bank loses an asset. Hence, the TCE ratio demonstrates to what degree banks are leveraged. It shows how many cents are available in TCE for every dollar in loans made. Generally speaking, banks hold around four cents in TCE for every dollar in assets. This means the banks can only tolerate a four percent loss in their assets before becoming insolvent. Hence, the TCE ratio is an important measure of bank

[427] David McNally, *Global Slump: The Economics and Politics of Crisis and Resistance*, 106.
[428] This is a narrower measure than the Tier 1 capital adequacy ratio, which includes in the numerator common shares, preferred shares and deferred tax credits.

stability. The table below shows the 2011 TCE ratios for Canada's top banks. Canada's biggest banks have TCE ratios of around four percent.

**Table 8. Big 6 TCE Ratios**

| Bank | TCE |
|---|---|
| Royal Bank of Canada | 4.2% |
| The Toronto-Dominion Bank | 4.1% |
| Bank of Nova Scotia | 4.3% |
| Bank of Montreal | 4.6% |
| Canadian Imperial Bank of Commerce | 3.9% |
| National Bank of Canada | 3.8% |

Source: http://ca.advfn.com, October, 2011

To illustrate the importance of the TCE ratio, let us examine Canada's top bank. RBC equity equals $40 billion, and its TCE ratio is 4.2 percent. Hence, if its asset prices were to fall by 2.1 percent, the bank would have to raise $20 billion to cover losses. If the value of the assets of RBC were to decrease by 4.2 percent, the bank would become insolvent. From this perspective, bank stability is a function of the TCE ratio and the price stability of its assets. TCE ratios averaging four percent have prevailed for at least fifteen years in Canada. This has led some commentators to suggest that the "sterling reputation" of Canada's banks is "an illusion" and that these will be "the next dominos to fall."[429] Nevertheless, despite high levels of leverage the banks have been stable for almost two decades.

This suggests that leverage alone cannot explain the stability or instability of the Canadian banking system over the last decades. The TCE highlights the importance of

[429] Daniel Tencer, "Canadian Banks' Sterling Reputation An Illusion, Financial Blog Argues," *Huffington Post* August 19 2011. http://www.huffingtonpost.ca/2011/08/19/canadian-banks-illusion_n_931327.html.; Body Erman, "Canada's banks: Next dominos to fall?," *The Globe and Mail*. September 10 2012. http://m.theglobeandmail.com/report-on-business/streetwise/canadas-banks-next-dominos-to-fall/article2134871/?service=mobile.

*bankasset stability.* To be sure, highly leveraged banks will remain stable as long as their assets remain stable. Hence, we must examine the quality of bank assets. Low quality assets are those that might quickly turn to "junk" (e.g. collateralized debt obligations). High quality assets usually constitute securities, such as ownership shares in an oil refinery. To put it differently, high-quality assets tap into the stream of value directly, whereas low-quality assets do not. Therefore, there is an important linkage between bank assets and capital accumulation that must be examined.

Thus far we have examined the structure of the Canadian banking sector. We have seen that the banks are both competitive and highly leveraged, despite relative insularity and concentration. By examining the TCE ratio, we established that bank asset stability was an important foundation for the enduring buoyancy of the banking sector during the global financial crisis. In what follows, I argue that the historical dynamics of capital accumulation underlie the stability or instability of bank assets, their composition and the composition of bank liabilities.[430] Economic growth itself is fundamental to bank asset stability. Hence, in order to understand the stability of bank assets and liabilities during the Great Recession, we must examine the long-run dynamics of capital accumulation in the period preceding the crash and re-embed the banks in these historical processes.

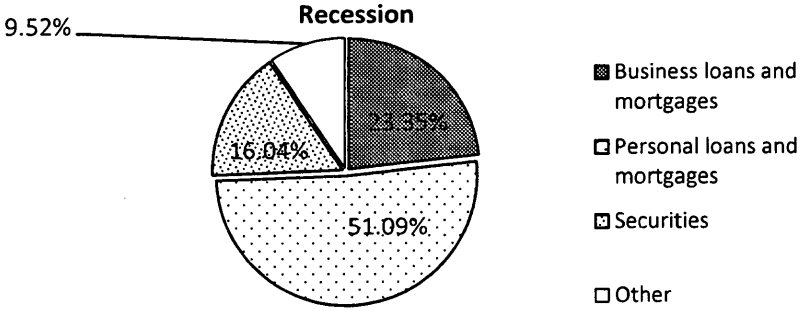
**Re-embedding the banks in the historical dynamics of accumulation**

The Canadian banks were stable in the face of the recession of 2008-09 despite competitive leveraging and structural instability.This highlights the limits of examining the banks in abstraction from the historical dynamics of accumulation. The outward

[430]Historical contingencies and short-run cyclical phenomenon are important secondary determinants of bank asset prices.

structural stability or instability of the banking sector is not of central importance when analysing the soundness of the banks. To be sure, bank "stability" and "instability" tell us very little when abstracted from capital accumulation. This kind of abstraction ignores the production of profit as the principal factor governing general economic stability. In this section, I develop the argument that bank asset stability was a function of the stability of accumulation in the period in question. To make my case, I examine business loans and mortgages, personal loans and mortgages, securities, as well as bank liabilities and financial profits. I argue that each of these categories was stable in the fifteen years preceding the crisis, and that this stability reflects the strength of the underlying economy.

**Figure 55. Major bank assets before the Great Recession**




Source: CANSIM Table 176-0011

Figure 55 shows the composition of major bank assets in Canada before the Great Recession of 2008-09. As can be gleaned from the chart, the majority of assets were personal or business loans and mortgages. The upshot is that the primary source of revenue for all banks has been interest income on these loans.[431] For instance, in 2010 the

[431]Mario Seccareccia. "Financialization and the Transformation of Commercial Banking in Canada."*University of Ottawa*, 2010.

Bank of Nova Scotia's total interest income was $16.89 billion, whereas its total income from other sources was only $6.88 billion. Approximately 71% of its revenue was based on interest from loans and securities.[432] To be sure, interest comes primarily from loans to businesses and workers and from returns on investments. Moreover, it is typical for interest-bearing loans to make up the greatest proportion of bank assets. In the case of RBC, in 2010 loans made up 40 percent of total tangible assets. Since the 1980s, the trend has been for loans to decrease as a proportion of assets for all banks in Canada. In fact, in 1988 loans made up 75 percent of total bank assets. By 2009 they had fallen to 56 percent.[433] Nevertheless, loans still make up a significant proportion of total bank assets. Thus, for the purposes of this chapter, we will focus on the role of loans, mortgages and securities in stabilising the banks during the recent global financial meltdown.

The Government of Canada recognized the potential for disaster in 2008-09 when it initiated the Insured Mortgage Purchase Program to make billions of dollars available to the banks.[434]The Canadian Mortgage and Housing Corporation (CMHC) wasto buy up potentially distressed mortgages. To this end, $125 billion CAD were made available. Of this sum, the banks made use of $69.35 billion. Importantly, they did not make full use of the $125 billion available from CMHC because these assets were for the most part

[432]Mergent Online. Bank of Nova Scotia Halifax (NYS: BNS) Income Statement. Accessed June 13, 2011.
[433] OECD, "Table 1.1.b Income Statement and Balance Sheet, all banks, percentages: Canada," *OECD Banking Statistics: Financial Statements of Banks 2012*, (Paris: OECD 2012), http://www.oecd-ilibrary.org/finance-and-investment/oecd-banking-statistics-financial-statements-of-banks-2012/income-statement-and-balance-sheet-all-banks-percentages-canada_9789264180291-table15-en.
[434] Jean-Francois Nadeau, "The Insured Mortgage Purchase Program," *Library of Parliament of Canada*, March 13 2009, http://www.parl.gc.ca/Content/LOP/ResearchPublications/prb0856-e.pdf.

quite sound.[435] In fact, the ratio of mortgages in arrears three or more months to total mortgages has remained below 0.5 percent since the outbreak the crisis, and has remained lower than its average levels from 1991-2001.[436] In contrast, this number reached 16 percent in the U.S. during the worst of the crisis.[437] Moreover, consumer insolvency rates have remained relatively low in Canada, and business insolvency rates have actually fallen.[438] In what follows, we will examine mortgages, loans and securities in great detail to understand the source of their stability.

**Business loans and non-residential mortgages**

Currently, 23.9 percent of all bank loans go to business. This number has been decreasing steadily since 1998 (when it stood at 37.4 percent). The stability of this asset will depend upon business profitability. Theoretically, strong profitability in the business sector contributes to stable loan repayments and therefore secure bank assets.Likewise, weak profitability leads to insecure bank assets in the form of loans. In the fifteen years preceding the financial crisis of 2008-09, loans to business became increasingly stable, yet increasingly scarce. Let us examine this more closely.

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[435] In addition to those funds, the Bank of Canada lent the banks $41 billion and Canadian banks in the U.S. received $111 billion from the U.S. Government.

[436]Canadian Bankers Association, "Number of Residential Mortgages in Arrears," July 2012, http://www.cba.ca/contents/files/statistics/stat_mortgage_db050_en.pdf.

[437]Bank of Canada, Percentage of Subprime Mortgages in Arrears for More Than 90 Days or in Foreclosure, March 2010, http://www.bankofcanada.ca/wp-content/uploads/2010/03/slide10_230608.pdf.

[438] In 2007, 2008, 2009 and 2010 Canadian consumer insolvency rates were 3.1, 3.4, 4.5 and 5.1 respectively. Per 1,000 aged 18 and over. Business insolvency rates for the same years were 3.2, 3.1, 2.9 and 2.3 per 1,000 businesses. "Annual Consumer Insolvency Rates by Province and Economic Region – 2000–2009," *Office of the Superintendent of Bankruptcy Canada*, accessed August 2012, http://www.ic.gc.ca/eic/site/bsf-osb.nsf/eng/br01820.html#three.

All in all, the Canadian financial system provides "over half of the short-term business credit in Canada."[439] Nevertheless, as profitability grew throughout the period, business interest, dividends and miscellaneous payments trended more-or-less flatly.[440]On the other hand, undistributed corporate profits grew rapidly in the same period.[441]In other words, retained earnings grew while interest payments stabilized. Firms were self-financing and deleveraging throughout the period.

Interest rates sank as firms became less dependent on the banks for financing their operations throughout the period. To be sure, as the mass of profit grew, the interest rate fell. This indicates that interest rates are not merely determined by competition between banks or by Bank of Canada policy, but by the relations of supply of and demand for loanable funds.[442] In other words, the production and realisation of profit and its relation to accumulation condition the interest rate. If firms can self-finance, the demand for money will decrease and so too will interest rates. In the period in question, capitalism in Canada was on an ascending curve of development and the system was awash with profits. Therefore, the supply of profits for reinvestment was great. This is reflected in a rising rate of investment throughout the period (see Figure 56).

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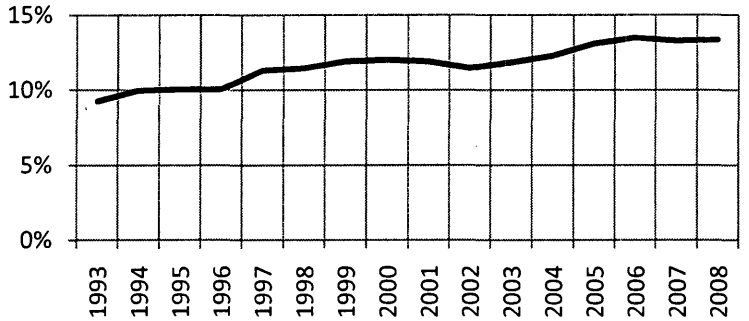
[439] Allen, "Are Canadian Banks Efficient?," 1.
[440] CANSIM Series v647072 adjusted for inflation (2005 = 100).
[441] CANSIM Series v647075 adjusted for inflation (2005 = 100).
[442]Harvey,*Limits to* Capital, 259-260.

**Figure 56. Rate of investment, 1993-2008**



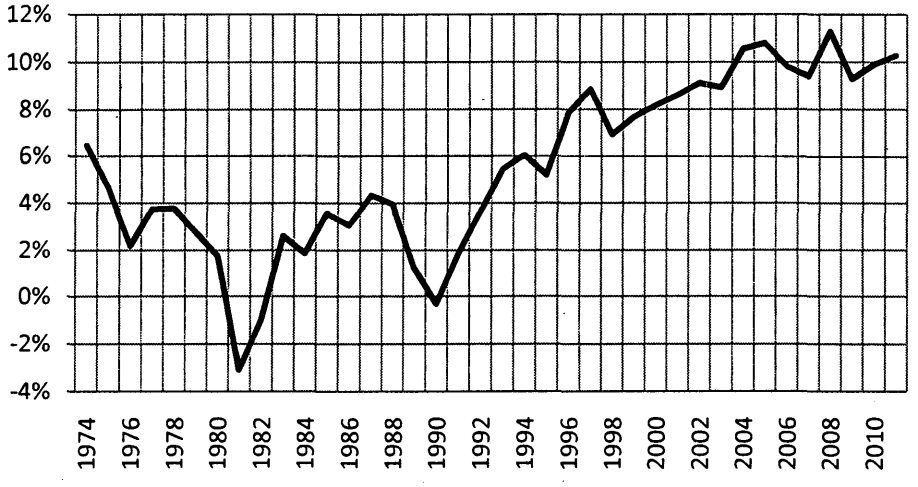

CANSIM Table 031-0003

Due to high profitability, firms were increasingly able to self-finance. As a result, the function of the banks as intermediaries became less important for business. Moreover, when large firms require loans, they "typically borrow directly from capital markets, or from syndicates that include and are often led by foreign banks."[443] Hence, as concerns large business, banking in Canada is subject to the same process of disintermediation that is occurring around the globe; i.e. "direct relations between firms and investors, without banks mediating between them."[444]As a result of these historical processes, firms have become progressively less dependent on the banks in Canada and other money lenders. These conclusions undermine the cogency of the idea that "finance" has inordinate power over the so-called "real economy."[445] The upshot is that interest rates fell throughout the

[443]Lev Ratnovski, and Rocco Huang, "Why are Canadian banks more resilient?"*IMF Working Paper*, July 2009, http://www.imf.org/external/pubs/ft/wp/2009/wp09152.pdf.
[444] Tony Smith, *Globalization: A Systematic Marxian Account,* (Boston: Brill, 2006), 115.
[445]Standford, James. *Paper Boom: Why real prosperity requires a new approach to Canada's Economy.*(Ottawa: Canadian Centre for Policy Alternatives, 1999).

1990s and 2000s.The positive effect of these developments on business is captured in the rate of profit of enterprise, which measures the rate of profit minus the interest rate.[446]

**Figure 57. Rate of profit of enterprise, 1974-2011**




Source: CANSIM Tables 031-0003, 176-0043 and 380-0020

The stability of loans to business as an asset depends upon business profitability and interest rates. Business profitability has been strong and interest rates low. In this context, business has been able to make a large dent in its outstanding debt. In 2006 the debt to equity ratio had fallen to 0.99, its lowest level in at least a decade.[447] As is apparent from Figure 57, lending to business has been good business in the period in question. Loans to business have been a highly stable asset.

[446]It is not inconsistent here to use the rate of profit of enterprise as a general indicator for the stability of bank loans to individual businesses as opposed to the MEC. As I have shown in Chapter 2, the MEC determines whether expanded reproduction will occur, i.e. the addition of new capital equipment and buildings. Indeed, the MEC may be zero, while the rate of profit of enterprise may be positive; hence, in this circumstance many firms are still able to service their debts.
[447]CANSIM Table 180-0003.

**Residential mortgages and consumer loans**

Banks were able to cope with declining interest rates to business by "aggressively seeking new clients."[448] By increasing the volume of credit to workers they were able to increase the *magnitude* of interest, despite historically low rates. As a result, a growing share of loans went to workers as business reduced its share. Residential mortgages now make up 43.99 percent of all bank loans in Canada.[449] To repeat, strong profitability in the recent period lead to a reduction of bank loans to the business sector as the latter increasingly self-financed and deleveraged. As the quantity of business loans decreased, and the interest rate with it, banks increased the *volume* of loans to workers (and other consumers) to compensate. Hence, economic growth has led to an increase in residential mortgages as a portion of total loans. This has fuelled a housing boom in Canada in which it is generally acknowledged that real estate is overvalued by as much as fourteen percent, especially in major cities like Vancouver and Toronto.[450] If accumulation slows, workers may be unable to repay their debts. In turn, this may lead to a reduction in the value of bank assets and to a potentially unstable situation for the banks. Therefore, the stability of this asset is linked to wage movements and interest rates.

In the context of stable accumulation, the relative shift of loans from businesses to workers has been good for banks. Aggregate wages and salaries were rising since the mid-1990s, thereby acting to stabilize this asset. Upper-income consumers take on consumer loans and mortgages as well, but the macroeconomic significance of workers

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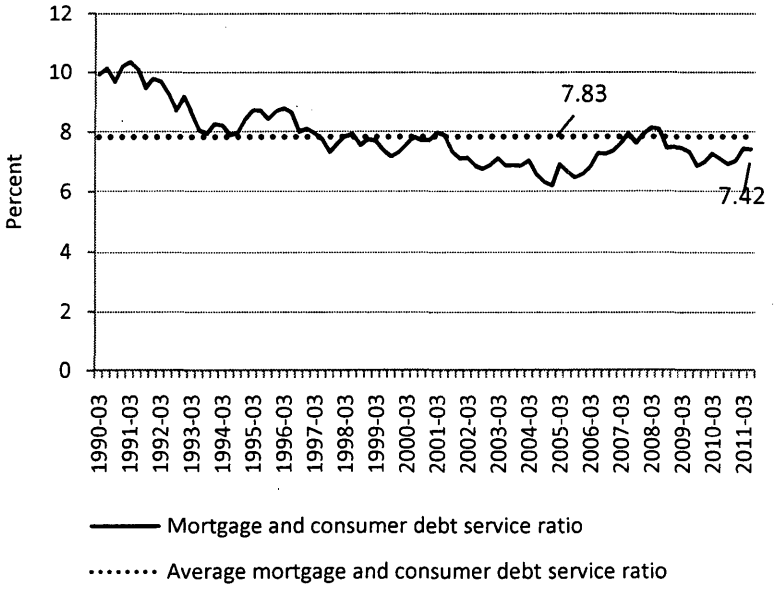
[448] Fletcher Barager, "The Credit Crisis in Canada: The First Six Months," *Relay*, 21: 9.
[449] CANSIM Series v36918 and CANSIM Series v53006714.
[450] Bank of Canada, "Financial System Review," June 2012, http://www.bankofcanada.ca/wp-content/uploads/2012/06/fsr-0612.pdf.

matters most in this area. It is the latter who are more likely to default. Of course, if accumulation were to slow down, wages would suffer and this situation would become unsustainable. Nevertheless, for the time being, it appears that this asset is quite stable.[451]

**Figure 58. Debt service ratio below historical average**




Source: CANSIM, Series v52154396

The debt-service ratio measures interest expense to personal disposable income.[452] The lower the ratio, the more stable are loans to workers. The debt-service ratio fell from 1990 to 2004, after which it remained below its historical average of 7.83 percent. The monthly payments of households were quite manageable in this period. In the U.S., on the other hand, the debt-service ratio peaked at 13.96 percent in the third quarter of 2007,

[451] Of course, accumulation did slow down after the Great Recession of 2008-09 and wages did suffer. In this context, historically low interest rates were one factor keeping housing assets relatively stable.
[452] CANSIM Table 384-0013.

almost double the Canadian ratio of 7.61 percent at that time.[453] This ratio was strengthened by falling residential mortgage rates. These declined secularly from the 1990s and throughout the 2000s, from approximately 9 percent to 5 percent for five-year mortgages.[454] Hence, falling interest rates alongside rising wages have led to relative stability in this area. Let us now turn to our final bank asset under consideration; i.e. securities.

**Securities**

Securities made up 16.04 percent of major bank assets before the financial crisis. In standard economic theory, the price of a security stands in close relation to its profitability. Although there is always the potential for a divergence of the price of a security from its profitability, major and persistent divergences only tend to occur in periods of low profitability. In those circumstances, investment funds turn to the stock market or other speculative undertakings for higher returns. As a result, they are not put to use for further capital accumulation. The upshot is that strong corporate profitability will result in steady security prices.

In the fifteen years preceding the Great Recession, profits and stock prices tracked each other closely, with no major divergences.[455]This reflected high levels of profitability and stable accumulation. When the financial crisis erupted in the U.S., stocks prices in Canada declined, but not sufficiently to cause significant long-term damage to bank balance sheets – especially since securities made up a relatively small proportion of bank

[453] US Federal Reserve Board, "Household Debt Service and Financial Obligations Ratios," September 2012. http://www.federalreserve.gov/releases/housedebt/default.htm.
[454]CANSIM Table 176-0043.
[455] CANSIM Table 176-0047 and CANSIM Table 380-0020.

assets. Since that time, stock prices have recovered, in part due to the relative strength of the domestic economy (reflected in resilient profit and investment rates within the country).[456] As a result of these processes, securities have been a stable asset throughout the period.

To sum up, thus far we have seen that Canadian banks are highly leveraged – and so appear structurally unstable. In light of this, we have discussed the importance of the health of bank assets to lasting financial stability. We have shown the linkage between the strength of bank assets and capital accumulation. In particular, we have seen that loans as well as mortgages to business and consumers have been stable over the last two decades, principally owing to growing business profits, falling interest rates and rising wages. Let us now examine the relationship between the strength of bank liabilities and accumulation.

**Are bank liabilities stable?**

Until now, we have focused on the relationship between bank assets and financial institution stability. On the other side of the ledger lie bank liabilities, including advances from the Bank of Canada, equity and deposits. Like other advanced capitalist economies, Canada has a fractional reserve banking system. The ratio of deposits in reserve to total deposits is called the reserve ratio. Although the 1991 *Bank Act* does not place legal restrictions on this ratio, banks continue to hold reserves for their day-to-day functioning (e.g. ATM withdrawals).[457] It is possible for a fractional reserve system to

[456]It is beyond the scope of this dissertation to explore the relationship between the dynamics of accumulation in the world economy and equity prices in Canada in the current period.
[457] Pierre L. Siklos, *Money, Banking & Financial Institutions: Canada in the Global Environment.*(Toronto: McGraw Hill, 2006), 326.

cause general financial instability. For instance, if depositors demand cash in excess of what the bank has in its reserves, insolvency could result. Hence, the reliability of business and consumer deposits is an important facet of bank stability.

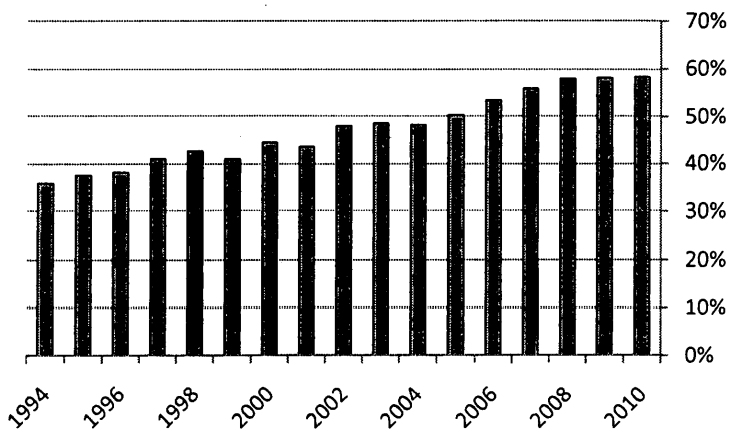
To get a sense of the dynamic relationship between capital accumulation and the composition of bank deposits,consider the following scenario. If the mass of corporate profit stagnates, business deposits in the banks shrink and interest rates rise as firms struggle to operate with lower returns. Conversely, if the mass of profit grows – which it did in the fifteen years preceding the global financial crisis – firms begin to deleverage, interest rates fall and, as a result, banks are forced to increase the volume of their loans to increase their share of available interest. At the same time as banks are forced to compete over access to interest on loans by seeking out new borrowers, businesses – awash with profits – increase their deposits in the banks. Hence, bank competition over deposits decreases.

In the period in question, banks increasingly financed their activities with business deposits. In other words, banks financed operations primarily by the conventional practice of borrowing from depositors, especially businesses. In a recent study, Ratnovski and Huang have shown that the stability of the banks in Canada was a function of ample depository funding.[458] Because "deposits are far less subject to runs when banks experience difficulty," this contributed to bank stability.[459] Ample business depository funding was made possible because the system was awash with profits. As

[458]Ratnovski and Huang, "Why are Canadian Banks more Resilient?."
[459] D. J. S. Brean, L. Kryzanowski, and G.S. Roberts, "Canada and the United States: Different roots, Different routes to Financial Sector Regulation," *Business History* 53, no. 2, (April 2011): 263.

Figure 59demonstrates, in the case of the Bank of Nova Scotia, business deposits as a percentage of total deposits have been rising secularly since 1994. They now make up close to 60 percent of total deposits. As a result of these processes, the banks have had a stable source of funding to finance their operations. The years preceding the Great Recession was a period of stable and profitable banking. Let us now examine financial profits more closely.

**Figure 59. Bank of Nova Scotia, business deposits as a percentage of total deposits, 1994-2010**




Source: Mergent Online, Bank of Nova Scotia Halifax,Balance Sheet

**Banking profits**

Profits may provide banks a buffer against potential losses during a recession. In the foregoing analysis, I have shown how businesses have been less reliant on the banks for financing their activities. The system has been awash with profits. As a result, interest rates have been historically low. This is reflected in a high rate of profit of enterprise. As a result, the case cannot be made that banks profited inordinately by gauging businesses and workers in this period, as is often argued by those who suggest

the banks have inordinate pricing power in Canada.[460] Nevertheless, financial firms involved in depository credit intermediation of the type discussed throughout this chapter have done remarkably well in the fifteen years leading up to the recession. Indeed, the rate of return on equity for both foreign-owned and domestic banks grew throughout the period 1993-2006. Interestingly, the rate of return equity of foreign-owned banks exceeded that of domestic banks from 2002-04, again undermining the idea that Canadian oligopolies have created non-competitive conditions.[461] Still, the year before the crisis broke out, net profits for these firms grew by 19.34 percent from the previous year.[462] In that year alone, they made over $16 billion in net profit. This profit was primarily acquired by increasing the volume of loans to workers – but it also tapped into the stream of corporate profit directly by lending to businesses. This means banks had substantial liquidity to cope with potential asset losses when the crisis erupted. This certainly added a layer of stability to Canada's financial system.

**Conclusion**

The foregoing analysis has called into question the widely held notion that theconcentration and centralisation of the banking system in Canada were the source of its stability leading up to, during and subsequent to the global financial crisis. From the standpoint of classical political economy, we examined the historical dynamics underlying bank stability by reintegrating the financial system into the historical processes of capital accumulation. The mass of profit grew domestically. As a result,

[460] The contribution of bank fees to income has been negligible in the period in question.
[461] See Figure 5 in Seccareccia. "Financialization and the Transformation of Commercial Banking in Canada."
[462]CANSIM Table 187-0001.

banks were able toprofit by making stable interest-bearing loans and finance by means of business deposits. The stability in the period in question was a result not of the profitability of the banks at the expense of business, but of the absolute growth of profitability for the Canadian economy as a whole. This benefited both business and the banks. Strong profitability and capital accumulation stabilised banks. Hence, the resilience of the banking system in Canada was a reflection of the fundamental stability of the economy as a whole at the time the global financial crisis erupted.

To feel the completion apart from any sense of growth, is in fact to fail in understanding. For it is a failure to sense dimly the unexplored relationships with things beyond. To feel the penetration without any sense of completion, is also to fail in understanding. The penetration itself is then deficient in meaning. It lacks achievement.[463]

– Alfred North Whitehead

What's fulfilment got to offer?

– Leonard Cohen

## Conclusion

Before bringing this dissertation to a close, a short summary as well as some of the policy implications of this work are in order. In this work, I argue that the long periods of stability and instability in capitalism are functions of movements in the marginal efficiency of capital. In particular, a falling rate of profit is an insufficient cause for instability and crisis. Instead, I have shown how a downward sloping marginal efficiency of capital (MEC) – itself the result of the slowing growth rate of the mass of profit endemic to the process of capital accumulation – results in increasing capitalist instability. The essential condition for stable capitalist reproduction – namely, capital accumulation – is progressively undermined as the fundamental condition for the propensity to invest progressively disappears. As the MEC approaches zero, the perpetual shocks to profitability to which the capitalist system is subjected become increasingly disruptive. Recessions become deeper and longer. Finally, once the MEC achieves zero, capital accumulation can no longer continue. A deep crisis of overaccumulation or failed valorization sets in and a depression begins.

[463] Alfred North Whitehead, *Modes of Thought* (New York: The Free Press, 1966): 48.

In Chapter 2, I demonstrated how the above processes manifested themselves concretely in Canada between 1974 and 1990. I showed how capitalism in Canada was characterised by increasing instability in the period and how the MEC trending to zero underlay this historical movement. This downward sloping MEC was fundamentally the result of an increasing organic composition of capital. Finally, I demonstrated how once the mass of profit began to shrink in 1988, fundamental instability was the result. Further capital accumulation until 1990 was only possible on the basis of the proliferation of credit, which in turn ushered in inflation. In response, the central bank raised interest rates, thereby deflating the credit bubble that was sustaining capital accumulation. Next to the Great Depression of the thirties, the ensuing depression was Canada's deepest and longest ever. In these ways, I demonstrate howthe intense upset and social torment of the early1990s was intimately bound up with the very process of capital accumulation itself.

Furthermore, I have shown how the conditions for the recovery and the establishment of a new phase of capital accumulation from 1993 to 2008 lay in the crisis of the early 1990s itself. I examine how this profound interruption in the process of capital accumulation put intense downward pressure on the price of machinery and equipment. As a result of a tsunami of bankruptcies at that time, the price of doing business got cheaper and the conditions for the implementation of new forms of work organization became more favourable. As the MEC began to improve, owing to cheaper means of production and a substantial reduction in the wage bill, sustained capital accumulation got underway around 1993. The implementation of new forms of work organization like JIT and new technologies like ICT was made possible owing to the

increased vulnerability and therefore pliancy of labour in this recessionary environment. As a result, businesses were able to implement new and effective ways to pump out more labour-time from workers. The result was high rate of surplus-value. In addition to the increase in surplus-value extraction that new forms of work organization like JIT made possible, these same processes resulted in a significant reduction in the inventory-to-shipment ratio. Hence, an important element of constant capital – namely buildings and structures responsible for housing stores of unsold inventories – was reduced significantly. Furthermore, the substantial cheapening of business computers, communication technologies as well as means of transportation – all essential components for JIT-ICT investment – reduced the constant capital component of the organic composition of capital. As a result, the organic composition of capital fell throughout the period. Finally, owing to JIT-ICT innovations, the turnover time of capital was significantly reduced throughout in these years. The result of all of these processes was a radical turnaround of the tendencies of decline. The rate and mass of profit began to grow as did the average MEC. A long phase of stable capital accumulation got underway around 1993.

The same transformations that resulted in a growing rate and mass of profit as well as a relatively high and upward sloping MEC significantly influenced the character of the business cycle in this period. Not only was the downward phase of the business cycles, or growth cycles, short and shallow owing to a high and increasing average MEC, but the introduction of JIT-ICT helped to smooth out the inventory investment environment. As a result, the endogenous shocks to which the capitalist system was

subjected were reduced both in number and magnitude. The result was a reduction in the stimulus of excess demand, which is the spur for the inventory investment cycle, as we have already seen. At the same time, the availability of cheap money owing to the rise in the rate of profit and the decline in the demand for loanable funds meant that the other element of the inventory investment cycle responsible for limiting the upward phase of the cycle – namely, the debt burden – became increasingly less of a restraint. To be sure, shrinking interest rates throughout the period facilitated smoother growth. Firms were self-financing and deleveraging and the cost of borrowing was decreasing. The result of these processes was a smoothing out – but not an elimination – of the inventory investment cycle.

Moreover, I have demonstrated that the fifteen-year period of stability preceding the Great Recession of 2008-09 was also the principal reason for Canada's quick recovery from the recent economic downturn. Indeed, Canada was the first G7 country to recover from the Great Recession and continues to lead in terms of real economic growth. In the penultimate chapter, I showed how the stability of the Canadian economy was not a function of the stability of the banks in the recent period. Instead, the stability of the banks was shown to a function of the stability of the economy. I attempted to re-embed the banks in the long-run dynamics of capital accumulation in Canada and to demonstrate how bank assets, as well as deposits and profitability were stable before the recession broke out, owing to a high and growing MEC. Indeed, the banks did quite well despite the fact that they were highly leveraged and therefore structurally unstable.

**Policy implications**

This brings us to the present and the policy implications for today of the foregoing analysis. First, it is well known that Canada has strong economic linkages with the United States. Indeed, the effects of the Great Recessionin this country were compounded by its strong trade and financial linkages to the U.S. through NAFTA. For instance, approximately 77.6% of Canada's exports went to the U.S. in 2008. For this reason, when the Great Recession erupted in the U.S., strong shockwaves were sent through the Canadian economy. Owing to the recession, exports to the U.S. fell by 28% (or $105 billion) in just one year.[464]However, while the recession lasted 18 months in the U.S., it lasted only seven in Canada.[465] Moreover, in terms of real GDP growth Canada was the first of the G7 countries to recover. It recouped numerically the jobs lost during the recession and gained several hundred thousand more, while employment in the U.S. remained below levels prevailing before the recession.[466] As we saw in Chapter 5, despite its strong linkages to the U.S., Canada has fared better than the latter because it has a nationally integrated economy with rhythms of accumulation of its own.[467]In the period preceding the global financial crisis, Canada was riding a long wave of economic stability. Indeed, we have seen that Canada and the U.S. have significantly different patterns of profitability. Thus, on the one hand, the recession in Canada was deep because of its unique relationship to the U.S. On the other, it was short because the rate and mass

[464]DFAIT (2012a)."Merchandise Trade, Trade Investment and Economic Statistics." Ottawa.
[465] Gordon Isfeld, "Slow U.S. recovery hampering Canadian growth: BoC." *Financial Post*, Feb. 21, 2013. http://business.financialpost.com/2013/02/21/slow-u-s-recovery-hampering-canadian-growth-boc/
[466]Philippe Bergevin and Finn Poschmann, "Are we ready for that double dip?"*Financial Post*, (August 20, 2011).
[467] Paul Kellogg, "Kari Levitt and the long detour of Canadian political economy," *Studies in Political Economy* 76 (Autumn 2005): 31-60.

of profit as well as the MEC were ascending when the crisis erupted. All of this to say that the processes of capital accumulation endogenous to Canada have been relatively stable over the course of the last twenty years. Therefore, even after the tremendous shock issued by the U.S. economy and despiteits tight trade relations with the latter, Canada continues to lead the pack of G7 nations.

This does not mean that Canada is out of the woods yet, figuratively speaking.Indeed, it appears that the challenges faced by Canada's capitalist class stem from instability in the international arena. In particular, Canada needs access to international markets for its exports. In this respect, it has lost significant ground since the outbreak of the crisis, especially because of its heavy reliance on U.S. markets. The Canadian state has been using the country's distinctive geography – spanning three oceans – to compensate for this fact. This geography has facilitated the development of unique economic linkages with other regions around the globe. In addition to the already-existing trend of increasing exports to the Asia-Pacific region (bilateral trade with that region now exceeds bilateral trade with Europe), the Great Recession has undoubtedly encouraged and accelerated the formation of new patterns of trade between Canada and the world economy. Indeed, half of Canada's current free trade agreements were established in the few years following the outbreak of the Great Recession of 2008-09.[468]The continuing effort on the part of Ottawa towards this end is apparent, as Prime Minister Stephen Harper tours emerging markets in the hopes of establishing stronger

[468]Department of Foreign Affairs and International Trade, "Negotiations and Agreements," http://www.international.gc.ca/trade-agreements-accords-commerciaux/agr-acc/index.aspx?view=d.Accessed January 6, 2012.

trade relationships.[469] The relative shift of exports to China, Brazil, India and elsewhere hints at how Canada is reconfiguring its international linkages. The Harper government aims to expand these linkages through arrangements like the Trans-Pacific Partnership and the Comprehensive Economic Partnership Agreement.[470]In turn, emerging patterns of international trade have already begun to leave indelible marks on Canada's diverse geographical regions and landscapes.[471] Thus, Canada's relatively stable endogenous market processes do not preclude it from attempting to establish new economic linkages with external markets. Moreover, the immanently recurring tendency for the rate of profit to fall and the mass of profit to stagnate will manifest itself in the future. The precise timing of this development, however, is subject to a variety of factors beyond the scope of this dissertation. We can, however, from the foregoing analysis, draw certain theoretical-empirical as well as policy conclusions.

Perhaps the most important lesson of the foregoing analysis is that the period of economic stability from 1993-2008 was only made possible by the crisis of 1990-92, the technological and organisational restructuring that followed it and the social anguish that was its result. As I have shown above, the terms of recovery after a crisis are simultaneously challenges to labour, in terms of wage reductions, new forms of work organization and the implementation of new technologies.Solong as the profit motive is the guiding force of the economy, the crises and economic instability it generates can

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[469] Mark MacKinnon. "Beyond the Pandas, Stephen Harper's China Visit Heavy on Trade, Light on Human Rights." *The Globe and Mail*, February 11, 2012.

[470]Department of Foreign Affairs and International Trade, "Merchandise Trade, Trade Investment and Economic Statistics" and "Minister Baird Concludes Trip to India." http://www.international.gc.ca/.Accessed January 6, 2012.

[471] Andrew Nikiforuk, *Tar sands: dirty oil and the future of a continent* (Vancouver: Greystone Books, 2008).

only be attenuated by ushering in *social instability*. Crises of overaccumulation are immanent to capitalism and can be overcome only at the expense of working people. Thus, the politics implied in this position points beyond capitalism.

The second lesson is that we should not overstate the degree to which the Canadian economy is integrated with that of the U.S. The experience of the last 40 years has shown that these countries have had different patterns of profitability and capital accumulation. If anything, the experiences of the Great Canadian Slump of 1990-92 and the Great Recession of 2008-09 have brought to light the fact that Canadian capitalism is significantly independent from U.S. capitalism. This explains why Canada was the first of the G7 countries to recover from the recession, while the U.S.– its closest trading partner – was still in dire straits. That the long-run dynamics of capitalist development in Canada and the U.S. are significantly different calls into question both the idea that Canada is a "rich dependency" and the politics of nationalist reformism implied in this position.[472]Instead, it points to a revolutionary politics to emancipate humankind from the imperatives of capital accumulation. It also points to future avenues of research. In particular, it points to the need for an analysis of the *combined and uneven* patterns of capital accumulation in North America. For instance, it would be worthwhile to examine how Canada's endogenous and exogenous political-economic processes combined to shape the character of the Great Recession and subsequent economic developments in this country in recent years.

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[472] For a critique of the idea of Canada as a "rich dependency," see Kellogg, "Kari Levitt and the long detour of Canadian political economy" and Jerome Klassen, "Canada and the new imperialism: The economics of a secondary power" in *Studies in Political Economy* 83 (Spring 2009):163-190. For a critique of the politics implied in this position, see Murray Smith, "Political Economy and the Canadian Working Class: Marxism or Nationalist Reformism?" in *Labour/Le Travail* 46 (2000): 343-368.

Indeed, economic developments in this country do not occur in a vacuum. For example, despite the country's superior fiscal position internationally, Canada's statutory retrenchment is set to exceed the OECD average for the coming period.[473] It is clear that the current government is taking advantage of the recessionary mood *internationally*and relative economic stability*nationally* to re-balance the budget. This is similar to what Paul Martin did in the mid-1990s. Indeed, in a recent interview with the *Wall Street Journal*, Prime Minister Harper was frank about his plans for austerity in the context of growth.[474]This has already begun to translate into cuts to public spending.Hence, developments in the political realm cannot merely be read offof developments in the national economic realm. To put it differently, political actions should not always be interpreted as responses to economic imperatives.Class struggle is on the agenda despite Canada's relatively strong economic performance. In Chapter 2, I showed how overaccumulation means capital accumulation cannot continue except by reducing wages or reducing the constant capital component of the organic composition of capital. This, we could say, is the ultimate limit to the struggle over output in capitalism: the ultimate economic imperative. In this sense, the crisis of capitalism limits wage growth. The upshot is that, in the current context, where capitalism in Canada has not reached the point of overaccumulation, should the political necessity arise, employers and the Canadian state have significant wiggle room to manoeuvre between the current political front of austerity and underlying economic imperatives rooted in the dynamics of capital

[473] Andrew Jackson, "Public sector austerity: Why is Canada leading the way?" *The Progress Economics Forum*, (August 2, 2011), http://www.progressive-economics.ca/2011/08/03/public-sector-austerity-why-is-canada-leading-the-way/

[474] Stephen Harper, "Harper: Evidence Still Points to Growth in Canada." *Wall Street Journal*, (August 26, 2011), http://online.wsj.com/article/SB10001424053111904875404576531031446794702.html

accumulation. For this reason, the massive student mobilizations in Québec were successful in their defensive struggle against austerity. It is clear that the room for manoeuvre that the state and the capitalist class enjoy can act as a safety valve against the implicit revolutionary implications of mass mobilizations against austerity.[475]

I would like to make one final point. This dissertation is a historical work in two senses. First, it recounts the dynamic historical processes that brought us to this point. Second, it strives to contribute to the making of history. For, as Thom Workman notes, "the pageant of humanity in the age of capitalism has been an illimitable web of misery. If we let the apologists define the present ... then we will have done a terrible disservice to working people everywhere."[476] In this sense, I hope this dissertation serves as a tool in the forging of history insofar as it contributes to an explanation ofthe current *conditions of struggle* so working-class activists can *invest that struggle with appropriate political forms* as a necessary prelude to the struggle for political power.

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[475] This is not to say that even in circumstances where the objective limits to reforms have been reached capital will not be able to make objectively unaffordable concessions with hopes of recouping them later, assuming the working class can be disorganized. What I am here describing is the overall terrain of struggle and the underlying dynamics that shape it. Conjunctural events can, of course, drammatically influence immediate results.

[476] Thom Workman, *If You're In My Way, I'm Walking: The Assault On Working People Since 1970* (Black Point: Fernwood Publishing, 2009): 1.

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## Appendix

**Constant capital:** Business sector end-year gross capital stock.See "organic composition of capital" belowfor further discussion.Statistics Canada, CANSIM Series v1408305.

**Surplus-value**: Corporation profits before taxes, government business enterprise profits before taxes, interest, dividends and miscellaneous payments. Also included are wages and salaries for non-production activities in trade, finance, insurance and real estate, commercial services, religious organizations, private households and public administration. Statistics Canada, CANSIM Tables 3800020, 3820001 and 3820006.

**Variable capital**: Before-tax wages and salaries of production workers in mining quarrying and oil wells, manufacturing, construction, education and related services, health and social services, transportation, storage, communication and other utilities, agriculture, fishing and trapping, logging and forestry and supplementary labour income. Note that I use a before-tax measure of variable capital, whereas Shaikh and Tonak use an after-tax measure. See Anwar Shaikh &Tonak, E. A. (1994) *Measuring the Wealth of Nations: The Political Economy of National Accounts.* New York: Cambridge University Press, pp. 187-8. This difference is unlikely to produce radically different results. Statistics Canada, CANSIM Tables 3820001 and 3820006.

**Organic composition of capital:** End-year gross capital stock over wages and salaries of production workers and surplus-value. For an alternative measure of the organic composition of capital in the Canadian context, see Murray Smith & K. W. Taylor, "Profitability crisis and the erosion of popular prosperity: The Canadian economy, 1947-1991," *Studies in Political Economy* 49, (1996). The measure for the organic

composition of capital employed here departs from that of Smith and Taylor in two important ways. First, as is the convention, Smith and Taylor include end-year net capital stock in their measure of constant capital. Shaikh argues convincingly against this convention. He maintains that a measure of gross capital stock better enables us to assess the changing profitability of an asset over its lifetime. I adopt this measure. For a detailed treatment of this question, see Anwar Shaikh, "Explaining the Global Economic Crisis," *Historical Materialism* 5, (1999), 106-7. Second, in addition to end-year net capital stock, Smith and Taylor include in constant capital the wages and salaries of non-production workers necessary for the reproduction of capitalism. They argue that these activities constitute socially necessary unproductive labour (SNUL). Contrary to Smith and Taylor, Shaikh, Tonak and Moseley adopt the conventional approach when dealing with this problem; i.e. that SNUL is a non-profit deduction from surplus-value. It is beyond the scope of this dissertation to engage with these debates. For the purposes of this study, I treat wages and salaries of non-production workers as a non-profit component of surplus-value.

**Turnover time**: Business sector end-year gross capital stock over business sector investment. This simple proxy measures the number of years it would take to turn over capital stock once. Statistics Canada, CANSIM Table 031-0002.

**Rate of accumulation**: Rate of growth of the business sector end-year gross capital stock. Statistics Canada, CANSIM Table 031-0002. Let $k$ equal capital stock and $t$ equal time. We can write the rate of accumulation as $a = (k_t - k_{t-1})/k_{t-1}$.

**Rate of profit**:Surplus-value at time *t* divided by end-year gross capital stock at time *t-1*. Let *s* equal surplus-value. Let *k* equal business sector end-year gross capital stock. Hence, the rate of profit can be written as $r = s_t/k_{t-1}$. Elsewhere, the rate of profit is measured differently. For example, in Chapter 5, corporation profits before taxes are used in the measure for the rate of profit of enterprise. The particular measure employed depends upon the process to be illuminated. For further considerations on this question, see the introductory paragraphs to Chapter 2.

**Marginal efficiency of capital:** Additional corporation profits before tax at time *t* over additions business sector end-year gross capital stock plus wages, salaries and supplementary labour income*t-1*. Statistics Canada, CANSIM Tables 031-0002 and 380-0016.[477] Let *P* equal corporation profits before taxes, *C* equal end-year gross capital stock and *W* equal wages, salaries and supplementary labour income. The marginal efficiency of capital can be written as follows:

$$MEC = \left(\frac{P_t - P_{t-1}}{(C_{t-1} - C_{t-2}) + (W_{t-1} - W_{t-2})}\right) = \frac{\Delta P_t}{\Delta C_{t-1} + \Delta W_{t-1}}$$

[477]Statistics Canada.Canadian Socio-Economic Information Management System (CANSIM).http://www5.statcan.gc.ca/cansim/