

## CANADIAN MANUFACTURING MALAISE: THREE HYPOTHESES

Matt Krzepkowski and Jack Mintz<sup>†</sup>

### SUMMARY

The danger in politicians promoting the idea that “Dutch Disease” is responsible for the decline of the Ontario manufacturing sector is that the suggestion implies that Canada’s manufacturing sector will bounce back if only we could slow down oil sands development, or if the Canadian dollar were to devalue. In reality, evidence suggests that the decline in Ontario manufacturing is the result of long-term structural changes in the economy, independent of the rise of the country’s natural-resource sector and the rising dollar. And the sooner policy-makers realize that, and stop blaming the decline in manufacturing on Dutch Disease (which holds that a booming natural-resource sector that drives up our dollar makes our manufacturing exports less competitive) the sooner they can get to work on helping manufacturing-dependent regions transition to the evolving economy.

A closer analysis of Canada’s manufacturing sector shows that jobs in that sector have been disappearing across the country since the end of the Second World War, with the sector’s share of employment falling dramatically well before rapid development began to take hold in the oil sands, and back when Canada’s dollar was still worth far less than the American dollar. It is a trend that has been occurring among most of our OECD peers, including the United States, which may be due to the widespread reallocation of production to lower cost countries.

But it is also true that Canada’s manufacturing productivity performance in particular has been declining for a generation, with especially poor performance in the last decade, when labour productivity in Canada grew at just a quarter of the U.S. rate. Meanwhile, capital investment that may have improved the competitiveness of Canadian manufacturing has been anemic.

Yet there is no particular reason to lament the scaling-down of manufacturing jobs in Ontario. The province remains just as economically important, as a share of national GDP, as it was 30 years ago, and its unemployment rate has remained roughly in line with the Canadian average. Often the manufacturing jobs that disappear soonest are low-skill, low-paying jobs. Indeed, those workers that have remained in the sector have done very well, with the growth in weekly earnings in the Ontario manufacturing sector outpacing the national average.

It would be a grave mistake for Ontario’s policy-makers to argue in favour of hampering Canada’s oil sands development in hopes that it might devalue the dollar and revive their province’s shrinking manufacturing base. It would harm the national economy and yet, judging by the evidence, may do nothing to add jobs at Ontario’s factories. Instead, Ontario’s policy-makers should accept that those jobs might never return, and instead, focus their energies on finding ways to encourage growth in high-skill, high-paying jobs in other sectors that offer more promise.

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<sup>†</sup> We wish to thank two anonymous referees whose comments helped substantially improve this paper.

## MALAISE DANS LE SECTEUR MANUFACTURIER CANADIEN : TROIS HYPOTHÈSES

Matt Krzepkowski et Jack Mintz<sup>†</sup>

### RÉSUMÉ

Quand certains politiciens soutiennent que le « mal hollandais » constitue la cause du déclin du secteur manufacturier en Ontario, on pourrait comprendre à tort que ce secteur au Canada renaîtrait de ses cendres si seulement nous pouvions ralentir le développement des sables bitumineux ou si le dollar canadien perdait de sa valeur. En réalité, les études démontrent que le déclin de ce secteur en Ontario résulte de changements structurels à long terme dans l'économie, sans lien avec la place grandissante du secteur des ressources naturelles du pays ou avec la force du dollar. Et plus les décideurs seront prompts à se rendre compte de la situation et à cesser d'imputer au « mal hollandais » (qui soutient qu'une industrie des ressources naturelles florissante poussant à la hausse la valeur du dollar sape la compétitivité des exportations) le déclin du secteur manufacturier, plus tôt ils pourront se mettre à l'œuvre pour aider les régions qui dépendent de celui-ci à prendre le virage d'une économie en évolution.

Une analyse plus attentive indique que les emplois dans le secteur manufacturier ont commencé à disparaître au pays depuis la fin de la Deuxième Guerre mondiale; leur nombre a chuté brutalement bien avant que s'amorce pour de bon le développement des sables bitumineux, et au moment où le dollar canadien valait encore beaucoup moins que le dollar américain. Cette tendance s'observe dans la plupart des pays de l'OCDE, notamment aux États-Unis, et elle est peut-être attribuable au déplacement à grande échelle de la production vers des pays où la fabrication était moins coûteuse.

Mais il est également vrai que le rendement du secteur manufacturier au Canada en particulier est à la baisse depuis une génération et qu'il a été particulièrement faible au cours de la dernière décennie tandis que la productivité du travail dans le pays croissait au quart, tout au plus, de celle des États-Unis. Entre-temps, l'investissement en capital qui aurait pu améliorer la compétitivité de cette industrie au Canada a été anémique.

Il n'existe pourtant aucune raison particulière de déplorer la perte graduelle des emplois dans ce secteur en Ontario. La province continue d'avoir le même poids économique qu'il y a 30 ans quant à sa part du PIB, et son taux de chômage est demeuré sensiblement le même que dans le reste du Canada. Bien souvent, les emplois qui disparaissent les premiers dans le secteur manufacturier sont ceux qui sont peu qualifiés et mal payés. Il est clair que les travailleurs qui sont restés ont eu la part belle, car la croissance de leurs salaires hebdomadaires en Ontario a été plus rapide que dans le reste du pays.

Les décideurs de l'Ontario commettraient une grave erreur en prenant le parti de freiner le développement des sables bitumineux du Canada dans l'espoir de pousser à la baisse le dollar canadien et de ranimer le secteur de la fabrication de plus en plus exsangue. Cela nuirait à l'économie nationale sans pour autant créer d'emplois dans les usines de l'Ontario, selon différentes études. Les décideurs de l'Ontario devraient plutôt admettre que ces emplois ont disparu pour de bon et concentrer leurs énergies sur des façons d'encourager la croissance d'emplois hautement qualifiés et bien rémunérés dans d'autres secteurs plus prometteurs.

<sup>†</sup> Nous souhaitons remercier deux lecteurs anonymes dont les commentaires ont substantiellement contribué à améliorer cet article.

## INTRODUCTION

Canadian politicians have debated what role “Dutch Disease” has had as a source of Canadian manufacturing decline, focusing on the development of the Canadian resource sector, and most notably Alberta’s oil sands, and the subsequent effect on the Canadian dollar and manufacturing. Under the “Dutch Disease” hypothesis, it is argued that a boom in the resource sector crowds out the manufacturing industry as a result of an appreciating currency that makes manufacturing less competitive internationally.

Yet there are other competing hypotheses that can explain the decline of Canadian manufacturing. Two in particular come to mind: poor productivity performance and the shift of manufacturing jobs to low-wage countries. In this briefing paper, we consider all three hypotheses to explain the decline of manufacturing.

While the recent run up in both commodity prices and the exchange rate had some impact in reducing manufacturing jobs, we come to the conclusion that the role of Dutch Disease in explaining the overall decline of manufacturing is overblown.<sup>1</sup> A much more important long-run explanation holds for the continuing decline in the manufacturing sector in Canada in the past half-century. This decline is not much different than what has been happening in most other OECD countries. For this reason, other factors explaining the decline in manufacturing need to be more carefully examined, rather than focusing on shorter-term impacts of exchange-rate movements.

## THE DUTCH DISEASE ARGUMENT

Dutch Disease is named in reference to the decline of the manufacturing sector in the Netherlands following the exploitation of newly found natural resources in the 1960s. The development of the resource industry leads to a capital inflow and higher exports, resulting in an appreciation of the currency, thereby squeezing out other export industries such as manufacturing.

In Canada, the Dutch Disease argument is being popularly applied to the development of the oil-sands industry in Alberta and the decline of manufacturing, although in principle could be linked to the growth of the natural-resource economy in general. In the past decade, the nominal commodity share of mining and agricultural products has increased, but has fallen for forestry and natural gas.

Nonetheless, without question, the growth of the crude-oil share has dominated in determining the commodity price index.<sup>2</sup>

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<sup>1</sup> This point was made by Jack M. Mintz in “No Dutch Disease Here,” *Financial Post*, March 2, 2012 and Mark Carney, “Remarks” at the Spruce Meadows Roundtable, 2012, found at Bank of International Settlements, <http://www.bis.org/review/r120910b.pdf>.

<sup>2</sup> Bank of Canada, 2012, <http://www.bankofcanada.ca/rates/price-indexes/bcpi/>.

Even then, one can be confused as to whether the value of production has been due to new production or to higher commodity prices. For example, while petroleum production has grown 8.9 per cent from the beginning of 2007 to the end of 2011<sup>3</sup>, West Texas Intermediate prices have increased by almost two-thirds (with substantial volatility during that period). In contrast, shale-gas development arising from new fracking technologies has led to lower, not higher prices for natural gas in North America, with the Henry hub price falling from roughly \$9 per million cubic feet in 2008 to less than \$4 by the end of 2011 (total natural-gas production in Canada declined from 2008 to 2011). Expanded shale-gas development is entirely different, since lower North American natural-gas prices encourage energy-using manufacturing industries to expand.

Therefore, we focus on internationally determined high energy prices as the primary source of “Dutch Disease.” Linking high energy prices and manufacturing decline relies on the connection between three stylized facts: over the last decade, energy prices have soared; the Canadian dollar has appreciated against the U.S. dollar by 50 per cent since 2000; and the employment share of manufacturing has fallen in Ontario, Quebec, and the rest of Canada.

Several recent papers have looked at the extent of this phenomenon in the Canadian context. A paper published by the Institute for Research on Public Policy used a two-stage procedure with disaggregated data from 1992 to 2007 in an analysis of the effect of energy prices on manufacturing output in the past decade.<sup>4</sup> The authors found that 25 of 80 industries, accounting for one quarter of manufacturing output, were negatively affected by the estimated effect of energy prices on currency appreciation. They found the magnitude of this effect to be rather small in larger industries, such as food, metals and machinery equipment, with an average elasticity measure of between -0.07 and -0.16, indicating that a one per cent increase in energy prices would lower output by between 0.07 to 0.16 per cent. Several small industries, including textiles and apparel, were more affected by the increase in energy prices.

Though Canada has strong natural resource and energy sectors, a number of factors have affected the price of the Canadian dollar, not the least of which has been the decline of the U.S. dollar. Beine, Bos and Coulombe<sup>5</sup> isolate the effect of Canadian dollar appreciation and U.S. dollar depreciation from 2002 to 2007. They estimate that 42 per cent of the increase in the Canadian dollar was due to an appreciation in the Canadian currency generally, with the U.S. dollar’s depreciation relative to its trading partners explaining the remainder. Overall, they estimate 24 per cent of manufacturing employment losses between 2002 and 2007 were due to the appreciation of the Canadian dollar, as opposed to the depreciation of the U.S. dollar (62 per cent) or long-term structural decline (14 per cent).

Although the authors show this effect to be more pronounced in trade-exposed industries, it is not the whole story of how manufacturing as a whole is affected by energy developments. Given linkages in the domestic economy between resource and manufacturing sectors, a focus on both domestically exposed and trade-exposed sectors is important to consider as well.

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<sup>3</sup> National Energy Board, *Canadian Energy Overview*, 2011, <https://www.neb-one.gc.ca/clf-nsi/mrgynfntn/nrgyrprt/nrgyvrvw/cndnnrgyvrvw2011/cndnnrgyvrvw2011-eng.html>.

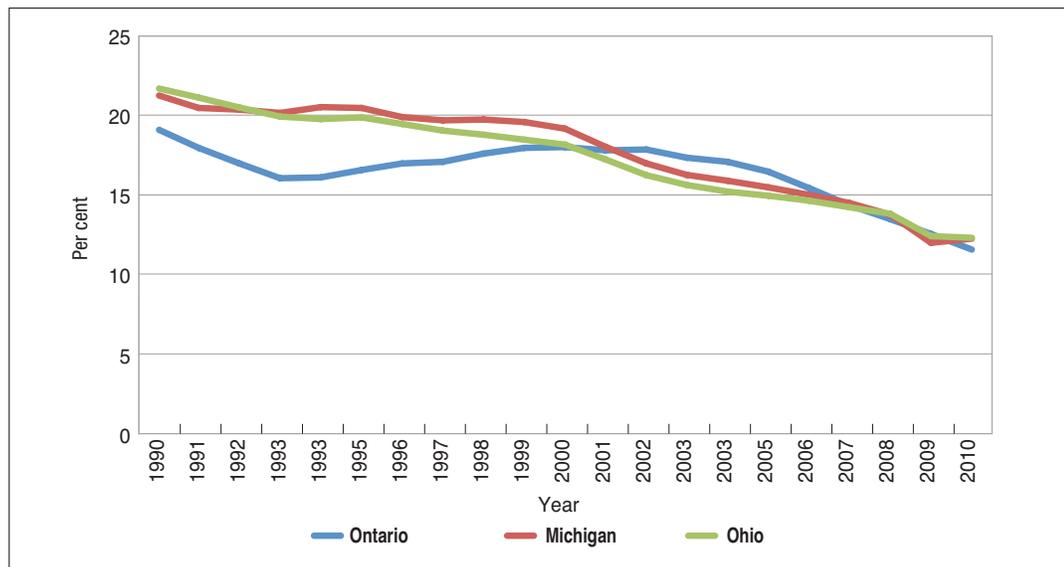
<sup>4</sup> Mohammad Shakeri, Richard S. Gray and Jeremy Leonard, “Dutch Disease of Failure to Compete?” IRPP Study No. 30, Institute for Research on Public Policy, 2012.

<sup>5</sup> Michael Beine, Charles S. Bos and Serge Coulombe “Does the Canadian Economy Suffer From Dutch Disease?” *Resource and Energy Economics* 34, 4 (2012): 468-92.

The evidence of the impact of high energy prices on manufacturing has concentrated on the large jobs losses in Ontario manufacturing over the last decade, which fell as a share of total employment from 18 per cent in 2000 to 11.5 per cent in 2011. This attention on a relatively short time period results in a stronger correlation between energy prices and falling employment. The decline in manufacturing jobs has been steady across Canada since the end of the Second World War. Though it leveled off during the mid-1980s, the manufacturing share of employment fell from 23 per cent in 1970 to 14 per cent in 1995, before declining to the current national rate of 11 per cent.<sup>6</sup>

A similar trend can be seen south of the border in the United States (Figure 1), taking a period of 20 years rather than only the past decade. Although the volatility in the Canadian dollar in the 1990s and 2000s helps explain shifting trends in Ontario, overall manufacturing employment has seen a similar pattern in key states such as Ohio and Michigan, which had relied heavily on the sector for economic growth since 1990. If much of the rise in Canada's currency valuation has been due to the depreciation of the U.S. dollar, we would expect to see less of a fall in American manufacturing employment, as they would rely more heavily on their own production. But as the following chart shows, this has not been the case, with the decline in manufacturing employment mirrored across the border.

**FIGURE 1: PER CENT OF JOBS IN MANUFACTURING**



Sources: Statistics Canada, Cansim Table 282-0008; U.S. Department of Labor, Bureau of Labour Statistics.

It would be difficult to argue that manufacturing job losses in Michigan and Ohio are a result of the Dutch Disease phenomenon. True, manufacturing jobs as a share of total employment in Canada did rise in the 1990s relative to what occurred in the United States, and began to fall when Canada's currency appreciated. But overall, the long-run pattern of manufacturing job losses in both Canada and the United States are similar, suggesting that a much stronger factor than commodity price effects explains the historical trends.

<sup>6</sup> OECD Structural Analysis Database (STAN), 2013.

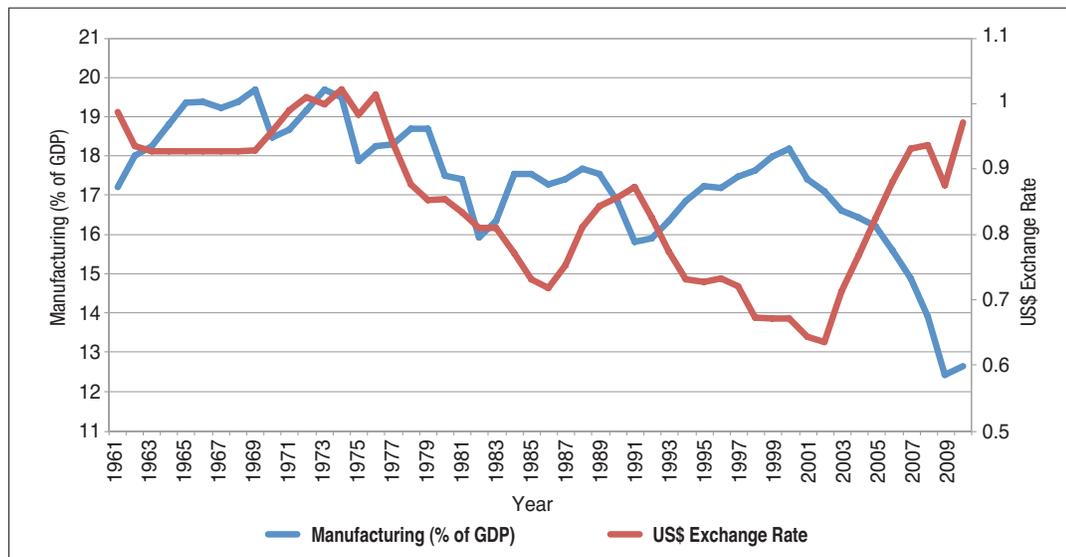
Attributing the decline in manufacturing to the energy boom or to a high Canadian dollar has the underlying assumption that growth in the manufacturing sector may revive after the energy boom is finished. The problem with this line of thought is that it might not focus on the right question if there are other factors that are important in explaining the structural decline in manufacturing. This will only delay the inevitable restructuring of the economy.

## PRODUCTIVITY AND MANUFACTURING DECLINE

The decline in manufacturing relative to the rest of the economy could be explained by poor economic performance in terms of productivity. If firms do not sufficiently invest in capital and adopt new innovations, they cannot increase output per worker and drive unit costs of production down to where they can outperform foreign competitors. Manufacturing value-added as a portion of GDP could therefore decline if manufacturing productivity is growing slower than the rest of the economy.

This has been the case for Canadian manufacturing. As shown in Figure 2, the manufacturing sector's value-added share of GDP has fallen, similar to, but not as rapid as, manufacturing's share of employment. In 1970, value-added in manufacturing was close to 20 per cent of GDP, falling to 16 per cent by 1992, rising to 18 per cent by 2000 and falling precipitously to about 13 per cent in 2011.

**FIGURE 2: CANADIAN MANUFACTURING VALUE-ADDED AS A SHARE OF GDP AND THE CANADA-US EXCHANGE RATE**



Source: Statistics Canada, tables 379-0004(GDP) and 176-0064 (exchange rate).

The increase in Canada's manufacturing value-added during the 1990s out-performed most of the OECD countries, with Canada increasing its worldwide export share, and may have been caused by the strength of the U.S. economy during that time.<sup>7</sup>

<sup>7</sup> Dirk Pilat, Agnès Cimper, Karsten Olsen and Colin Webb, "The Changing Nature of Manufacturing in OECD Economies," OECD Science, Technology and Industry Working Paper 2006 No. 9, Paris, 2006.

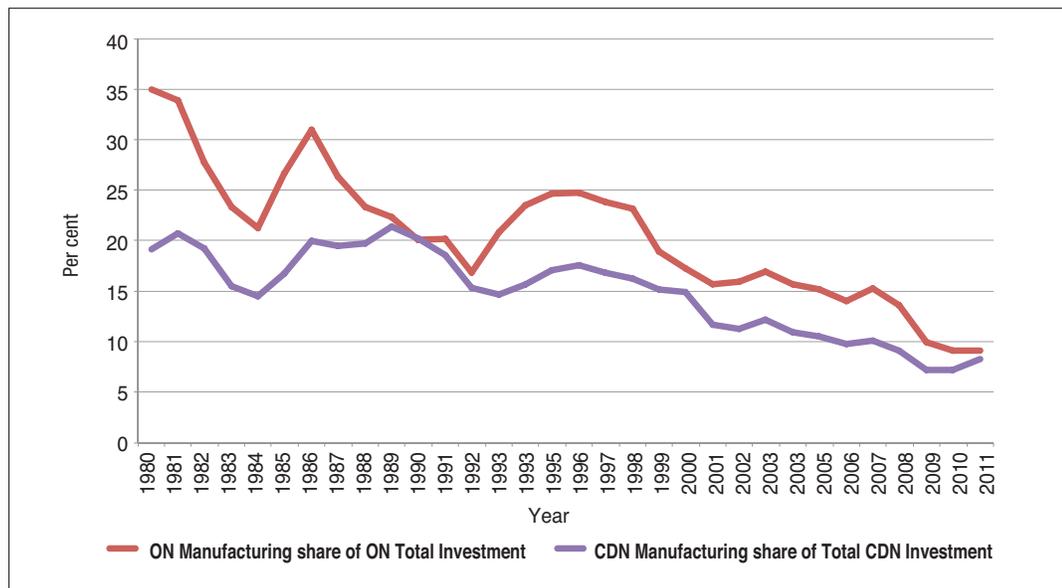
Two particular shocks have affected manufacturing in the past decade. As noted, the currency appreciated after 2002 to levels similar to the period prior to 1975, which led to falling sales and higher unit costs, due to shrinking scale. Further, the high-tech boom had burst in 2000, thereby affecting innovative capacity and the adoption of new technologies.

A Statistics Canada study suggests manufacturing labour productivity performance has been particularly poor in the past decade. In the 2000 to 2007 period, manufacturing labour productivity grew at roughly 1.2 per cent in Canada but it grew almost four times faster in the United States.<sup>8</sup> Labour productivity in Canadian manufacturing declined from the previous three decades.

Two factors explain labour productivity: capital deepening and multi-factor productivity. Capital-deepening results from investment in machinery, structures and other forms of capital that increase the ability of businesses to grow output relative to the growth in labour inputs. Multi-factor productivity is growth of output due to innovation and entrepreneurship in excess of the growth in capital and labour inputs.

With respect to capital deepening, investment by manufacturing industries has been anemic, thereby leading to slower labour productivity growth. In the past 30 years, Canadian investment in manufacturing as a share of total private investment (Figure 3) has declined from 20 per cent in 1980 to 10 per cent in 2011, with an even stronger decline in Ontario (from over 30 per cent to 10 percent) — although the most significant decline was during the 1980s when oil prices were low.

**FIGURE 3: MANUFACTURING SHARE OF TOTAL PRIVATE INVESTMENT**



Source: Statistics Canada. CANSIM Table 031-0002

<sup>8</sup> John Baldwin and Wulong Gu, “Productivity Performance in Canada: 1961 to 2008: An Update on Long-Term Trends,” *The Canadian Productivity Review*, Statistics Canada, Ottawa, 2009.

Statistics Canada also estimates that multi-factor productivity has been poor as well, including during the past decade. However, in a recent study, Diewert and Yu<sup>9</sup> estimate that multi-factor productivity for all industries has grown by 1.03 per cent annually during the 1961 to 2011 period, much higher than the annual 0.28 per cent estimated by Statistics Canada. The most important difference in estimates is with respect to growth in capital services. Diewert and Yu estimate lower capital growth and, therefore, higher multi-factor productivity compared to Statistics Canada estimates. Although there are several factors explaining these differences, much of the debate arises from the difficulty in estimating capital services needed to measure capital growth, due to difficult-to-measure values such as expected capital gains, effective tax rates on capital, and financial cost of capital. Although it is a more important concept in capturing innovation, multi-factor productivity is quite problematic to estimate precisely. Nonetheless, even Diewert and Yu estimate poor multi-factor productivity for the Canadian economy in the past decade. However, their results apply to all industries and not just manufacturing.

An appreciation in the Canadian dollar may itself have an effect on changes in productivity. Multi-factor productivity may fall if exporting industries are unable to take advantage of returns to scale of production or export intensity, and will therefore see a drop in efficiency. However, a strong dollar should also cause an increase in capital intensity, as decreasing capital input costs and higher relative labour costs should encourage additional investment. That an increase in capital investment in manufacturing does not seem to have materialized is cause for some concern.

## GLOBALIZATION TRENDS AND MANUFACTURING

A diminishing reliance on manufacturing is not a trait common only to one province, Canada as a whole, or even North America. Employment in manufacturing has been falling over the last 35 years throughout most of the OECD countries.<sup>10</sup> Since 1975, the United States, United Kingdom, Germany and France, have had their manufacturing employment share drop even more than Canada's has.

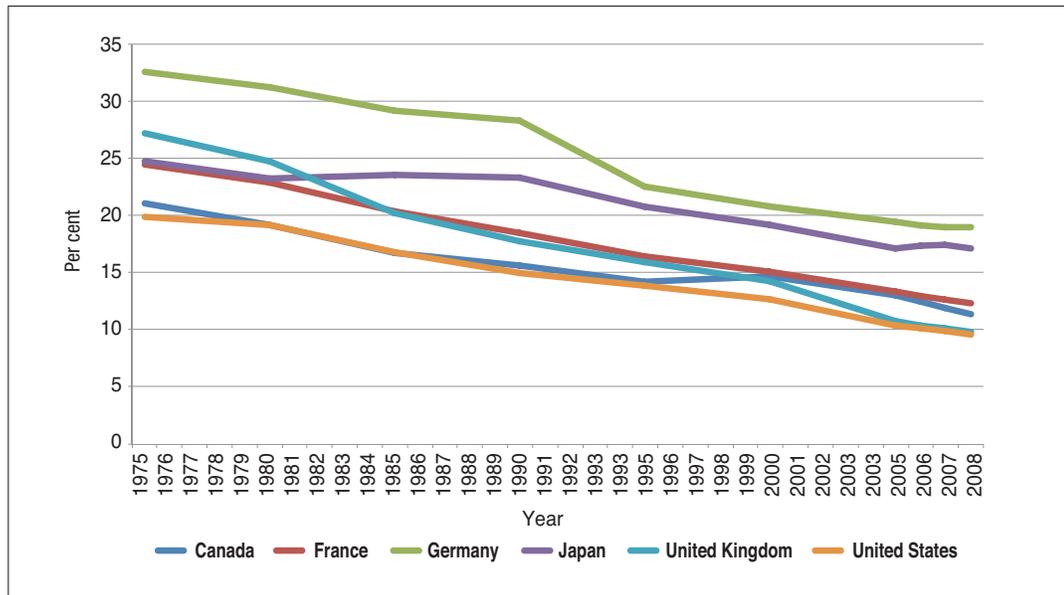
The drop in employment in manufacturing can be seen in Figure 4 below. In 2005, Canada has slightly more manufacturing as a share of total employment than in the United States and the United Kingdom, and less than in France and Germany, but there is a marked decline in each of these developed nations by an average of over 10 per cent.

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<sup>9</sup> Erwin Diewert and Emily Yu, "New Estimates of Real Income and Multifactor Productivity Growth for the Canadian Business Sector, 1961-2011," *International Productivity Monitor*, 24 (2012): 27-48. See also in the same volume: Wolong Gu, "Estimating Capital Input for Measuring Business Sector Multi-factor Productivity Growth in Canada: Response to Diewert and Yu," *International Productivity Monitor*, 24 (2012): 49-62.

<sup>10</sup> Mexico and Turkey have gained, but recent data is only compared to data from 1995. The employment share in manufacturing in Korea rose from 1970 to 1985, but has also been in decline since then.

FIGURE 4: MANUFACTURING SHARE OF TOTAL EMPLOYMENT



Source: OECD Structural Analysis Database (STAN), 2013.

This decline in manufacturing has been noted since the 1980s and is not specific to countries with large natural resources that may have been susceptible to Dutch Disease, but is apparent in a wide range of countries. These trends might reflect the outsourcing of manufacturing jobs to low-wage countries. Alternatively, the adoption of new technologies throughout the world could have led to a decline in unskilled jobs in manufacturing. A more careful analysis would be needed to understand these trends.<sup>11</sup>

Many originally viewed the shift from employment in industrial manufacturing to services as a concern, yet there is little evidence this shift has a negative effect on economic growth overall. Much of these shifts occur during recessions. Manufacturing and manual labour jobs are hardest hit during economic downturns, with automated processes replacing jobs, and the jobs, therefore, not returning with the economic recovery.<sup>12</sup> Low-wage jobs are particularly affected.

Coupled with increased competition between other sectors, particularly the oil and gas and technology sectors, these changes have been beneficial to employees who have remained in the manufacturing sector. Median weekly earnings in the Ontario manufacturing sector have increased in step with jobs in other sectors, going from \$704 in 2001 to \$840 in 2011, still above the national average.<sup>13</sup>

<sup>11</sup> An OECD study looked at the effect of outsourcing on manufacturing employment, but focused on the time period 1995-2002, where Canada actually experienced growth in manufacturing. See OECD, *Offshoring and Employment: Trends and Impacts*, OECD Publishing, Paris, 2007. A study by Industry Canada suggests that both outsourcing and the adoption of information technologies have had significant impacts on the adoption of skills in the manufacturing sector. See Beiling Yan, "The Demand for Skills in Canada: the Role of Foreign Outsourcing and Information-Communication Technology," *Canadian Journal of Economics* 39, 1 (2006): 53-67.

<sup>12</sup> Nir Jaimovich and Henry Siu, "The Trend is the Cycle: Job Polarization and Jobless Recoveries," NBER Working Paper No. 18334, National Bureau of Economic Research, 2012.

<sup>13</sup> Statistics Canada, Table 282-0072: Labour force survey estimates (LFS), wages of employees by type of work, North American Industry Classification System (NAICS).

Even though manufacturing has declined in Ontario, as a province it remains as economically important today as it was 30 years ago, with Ontario's share of national GDP remaining around 39 per cent, the same as in the early 1990s — though it should be noted that its share of population has increased.<sup>14</sup> The overall unemployment rate in Ontario was until recently slightly below the Canadian average, and now lies slightly above, at 7.8 per cent compared to the national 7.2 per cent.<sup>15</sup>

Ontario has seen a shift from manufacturing to finance, high-tech and other industries. These changes reflect the changing structure of the Ontario economy, away from manufacturing, which is not an unusual phenomenon in most OECD countries.

## CONCLUSIONS

Casting blame for lost manufacturing jobs on commodity prices ignores the inevitable fact that, even if the dollar begins to fall, it is unlikely that those lost jobs will return. Ontario should focus its economic policies on encouraging growth in high-skill, high-paying jobs in various industries, including high-tech, finance and business services, instead of competing for manufacturing jobs, especially low-skilled ones.

Policies should not attempt to slow down expanding industries, but should focus on revitalizing industries and regions hit by high unemployment and slow growth. Attempting to protect domestic industries from foreign competition results in higher prices for consumers. Further, protecting certain domestic industries from competition within our borders will not only increase domestic prices of domestic goods and imports, but will also hurt wages of workers and economic growth. At a time where the world is attempting to recover from a serious economic recession, having a strong resource sector can be a blessing, not a curse.

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<sup>14</sup> Statistics Canada, Table 384-0002: Gross domestic product (GDP), expenditure-based, provincial economic accounts, annual (dollars).

<sup>15</sup> Statistics Canada, Table 282-0008: Labour force survey estimates (LFS), by North American Industry Classification System (NAICS), sex and age group, annual (persons unless otherwise noted).

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Dr. Mintz has consulted widely with the World Bank, the International Monetary Fund, the Organization for Economic Co-operation and Development, and various governments, businesses and non-profit organizations in Canada.

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### ISSN

1919-112x SPP Research Papers (Print)  
1919-1138 SPP Research Papers (Online)

### DATE OF ISSUE

March 2013

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<http://policyschool.ucalgary.ca/?q=content/instruments-forest-habitat-connectivity>

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THE SYRIAN CRISIS: WHAT IT MEANS FOR THE WORLD; IS THERE A ROLE FOR CANADA?

<http://policyschool.ucalgary.ca/?q=content/syrian-crisis-what-it-means-world-there-role-canada>

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