

Value Added Tax and Consumer Spending: A Graphical Descriptive Analysis

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Received: Nov. 26, 2012 Accepted: December 20, 2012 Published: June 1, 2013

doi:10.5296/ajfa.v5i1.2762 URL: <http://dx.doi.org/10.5296/ajfa.v5i1.2762>

Abstract

The US has been considering introducing a National Consumption Tax federally. This would be in addition to the states' sales taxes. Since a consumption tax would be an added cost to the consumer, it would be expected that there could be some behavioral change by consumers. This paper uses graphs to describe and analyze whether consumers in the UK and Canada altered their behavior when those countries introduced their Value Added Tax (or Goods and Services Tax). Both retail volume and the percentage change from the prior year (on a monthly basis) were used in the graphic depictions. It was found that there was no or little major behavioral change when the new taxes were introduced. However, when the tax rates were changed substantially, consumers did adapt their behavior to take advantage of the changes by engaging in arbitrage behavior. US consumers are likely to act in a similar manner as UK and Canadian consumers.

Keywords: Value Added Tax, Consumer Behavior, Consumption Tax, United Kingdom
Canada United States

Introduction

Consumption taxes are indirect taxes. They can be single stage (e.g., Sales Tax) or multi-stage (Value-Added Tax). The first major country to have a value-added tax (VAT) was France in 1954. Since then, at least 135 countries (including all the European Union countries) have adopted a VAT, under a variety of different names. A common alternative name is the Goods and Services Tax (GST), used in a number of countries including Canada. VAT and GST are multi-stage consumption taxes with credits.

The United States has debated establishing a national sales tax or national VAT for many years, even introducing legislation - National Retail Sales Tax Act of 1997 (H.R.1325). This Act never became law. Although there is no VAT nationally in the US, some states have some modified version - Michigan has the 'single business tax' and New Hampshire has the 'business enterprise tax'. The U.S. Treasury has also looked into introducing a VAT type tax to replace the corporate tax (U.S. Treasury, 2007). As a more comprehensive tax reform, Graetz has proposed that most taxpayers would be removed from paying income tax but there would a national VAT instead (Graetz, 2010).

With the US considering enacting a VAT style national consumption tax, possibly a multi-stage one, this paper looks at the possible impact on consumer retail spending that such a tax may have. Two countries with similar economies and common law legal structures, namely the United Kingdom (UK) and Canada, will be analyzed. The paper will look at two aspects, the introduction of a Value- Added Tax on consumer spending and the change of rate of the VAT on consumer spending. The study will observe if there is any arbitrage effect of these events. Consumer behavior in the United States will be used as a control variable.

The United Kingdom introduced its value added tax in April 1973 at the rate of 10% as part of the UK's entry into the European Economic Community. The VAT superseded the purchase tax, a hidden tax charged at various rates. Over the years the rate of VAT changed a number of times. Between 1975 and 1979, there was a "higher rate" on luxury goods. Luxury goods included domestic electrical appliances, radios, TVs and hi-fi equipment, furs and jewellery.

Canada introduced its Goods and Services Tax in January 1991 at the rate of 7%. The rate remained stable for about 15 years. When introduced, the GST replaced the Manufacturers' Sales Tax (MST), a hidden tax charged on manufacturers at a 13.5% rate. Like the US, but unlike the UK, Canada has a federal system of government. The provinces (except Alberta) also charge a sales tax in addition to the federal GST (at rates between 7% and 10%).¹ The three territories do not charge their own sales tax.

Thus, the federal consumption tax is in addition to the provincial sales tax. To the consumer, the sum of the two taxes is the burden that is payable. If the US were to introduce a national consumption tax, it would be more like Canada. Most US states (45 out of the 50) have their own sales tax (counties and municipalities can also have their own sales taxes, even in some

¹ Some provinces, mainly in the Maritimes and Ontario, harmonize their sales tax with the GST. British Columbia has also harmonized in 2010, but in a referendum in August 2011, the citizens of BC voted to return to the provincial sales tax regime.

cases where there is no general state sales tax). This would mean that any national consumption tax in the US would be in addition to the state and local sales taxes.

This paper is organized as follows: after this introduction there is the literature review followed by the section setting out the research questions. The methodology section is next, followed by the graphical results and comments. The paper ends with the concluding remarks and speculation of the US consumers' behavioral changes.

Literature Review

A number of studies have examined whether the US should introduce a national sales tax or a national value-added tax (Metcalf, 1995; Mikesell, 1997, 2003; Zodrow, 1999; Gale, 2005; the President's Advisory Panel, 2005). A national value-added tax is still a matter of debate. In 2005 the President's Advisory Panel recommended against a national consumption tax, mainly due to the administrative costs and possible regressivity. There is a common perception that a national consumption tax would be regressive (Gale, Houser and Sholtz, 1996). Further, it has been suggested that if the burden of a National Sales tax falls more heavily on the lower income taxpayers, then the volume of retail sales may decrease (Feenberg, Mitrusi and Poterba, 1997). However, it is not necessarily the case that a national sales tax cannot be progressive (Metcalf, 1997). In fact, the VAT system in the Dominican Republic has been found to be progressive (Jenkins, Jenkins and Kuo, 2006). Caspersen and Metcalf (1995) state that a value-added tax in the U.S. could be only mildly regressive or even progressive. It has been found that the introduction of VAT in the UK in 1973 had only small distributional effects (Whalley, 1975).

Few studies have examined the impact on inflation due to the introduction of a national retail consumption tax. Esenwein and Gravelle (2004) in a Congressional Research Service paper stated that the introduction of a consumption tax would likely give a one-time price inflation to avoid an economic contraction. However, this is not certain. It has been suggested that retail prices rise by the amount of the retail sales tax when looking at states in some circumstances only (Poterba, 1996). Thus, there is uncertainty as to the effect of introducing a national consumption tax. It has been suggested that when a consumption tax replaces an income tax, individuals tend to save more initially and to consume less. Later, however, consumption eventually overtakes that of the original path, and there is higher consumption and a greater capital stock. (Fullerton, Shoven and Whalley, 1983).

Inflation has many drivers. Retail price increase is a major one. In turn consumer purchasing behavior affects retail prices. Consumers may alter their buying behavior at two sets of different times. The first time a VAT would be at the time of the introduction the VAT. The other times would be when the VAT rate changes. There have been few studies on the effect of VAT on consumer retail spending behavior. Barrell and Weale (2009), looking at quarterly data, found weak evidence of changes in consumer behavior when the European countries reduced their VAT rates. When the U.K. announced that hot foods sold retail would attract VAT, the market value of Greggs, a bakery that sells hot sausage rolls and other baked goods, dropped by £20 (\$32) million (Wallop and Chan, 2012). Since share prices are the present

value of expected future earnings, this indicates that the market expected that consumers would purchase less of Greggs' goods.

This study examines retail volume both at the introduction of a national consumption tax and at the times the tax rate is changed. Some insight for the US can be obtained by observing consumer behavior in the UK and Canada, countries which have similar economies to the US.

Research Questions

This study is designed to extend prior research by investigating the following questions:

A) Did the introduction of a National Value-Added Tax result in a decrease in the Retail Volume Index in the United Kingdom and Canada?

B) Did any increase (decrease) in the rate of a National Value-Added tax result in a decrease (increase) in the Retail Volume Index of the United Kingdom and Canada?

Methodology

Many factors influence how consumers spend. To look at the possible effect of the introduction, and rate changes, of a VAT on consumer behavior, it is necessary to observe the behavior as close to the change as possible. Otherwise, it would be difficult to make the case that it was the change that caused or impacted the change in behavior. Retail volume data are generally given as annual and quarterly means. These time periods are too long to make a reasonable case for the analysis. Fortunately, the Organization of Economic Co-Operation and Development (OECD, 1960-2008) does have data on Retail Volume on a monthly basis for the US, UK and Canada. Data from the OECD, Main Economic Indicators are used in all the graphs.

An event-type statistical study would be the best way of analyzing the behavioral changes of consumers due to the VAT introduction or change in rate. However, due to the limited observations (n), formal statistical analysis would not be meaningful. This paper, instead, presents a graphical descriptive analysis. Each introduction of, or change in the rate, of the VAT will have two graphs. The first graph will show the level of retail sales in the particular month. These sales are scaled so that the average of the year 2000 is 100. This makes comparisons more insightful.

However, the observation of retail volume does not take into account any seasonality. Thus, the second graph shows the percentage change in the month from the same month in the prior year. For example, the percentage change for April 1973 is the change of the retail volume in April 1973 from the retail volume of April 1972, as a percentage. This would account for any variation in retail volume due to seasonality.

As consumer behavior is subject to many factors other than consumption taxes, the graphs will show the three months before the introduction (or rate change), the month of the introduction or rate change and the three months after. That is, there will be seven months observed in each graph. Taking both graphs should strengthen the conclusions from the observations.

As mentioned above, the UK introduced VAT in April 1973 and Canada introduced GST in January 1991. Both events had been publicized in advance. This was also generally the case for the changes in the VAT (or GST) rates. The public knew in advance that the rate change would occur. Sometimes, the advance notice was some months; for example the new Labour Party government in the UK announced in its November 1974 budget that it would introduce the higher rate tax on luxuries from April 1975. Other times the advance notice was very short. The new Conservative Party government in the UK, in its mid June 1979 budget, announced the increase of the VAT rates to 15% (from both the 8% standard rate and the 12.5% higher rate) to be effective about a week later. This study will show whether consumers made their strategic purchasing choices, having prior knowledge of the changes.

In the graphical observations the US retail volumes were used as a control. Also, the retail volumes in Canada and the United Kingdom were also used as controls where there was no change in those countries (but the other country introduced the tax or had a rate change). For example, when the UK introduced VAT in April 1973, Canada did not and so both Canada and the US were used as controls. Similarly, when Canada introduced GST in January 1991, both the UK and the US were used as controls. These added controls would strengthen the observational analysis.

Results

Introduction of a Value Added Tax System Nationally

United Kingdom Introduction of Value Added Tax in April 1973

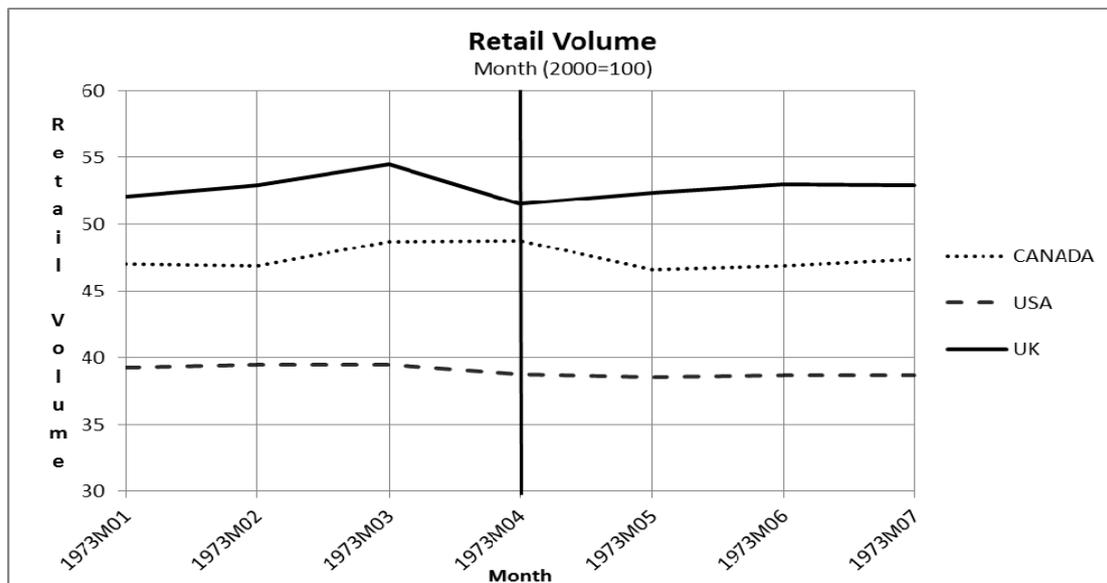


Figure 1. UK introduces VAT April 1973: Retail Volume Index

The retail volume decreased somewhat from March 1973 to April 1973 for the UK. It then rose slowly for the next three months. The main event at this time that influenced taxpayers was the introduction of VAT in April 1973. The retail volume increased in March 1973, prior to the introduction. This would indicate that consumers anticipated the introduction of VAT by bringing forward their purchases in the months prior to that in which VAT took effect.

The behavior of the UK differs from that of the US and Canada. From March 1973 to April 1973, the retail volume increased slightly for Canada and decreased slightly for the US. Overall the US was fairly stable and Canada had a slight movement but not really significant. Since the retail volume change in the UK occurred at the time of the introduction of VAT and differed from those of US and Canada, this indicates that the introduction the VAT in the UK caused consumers to amend their behavior.

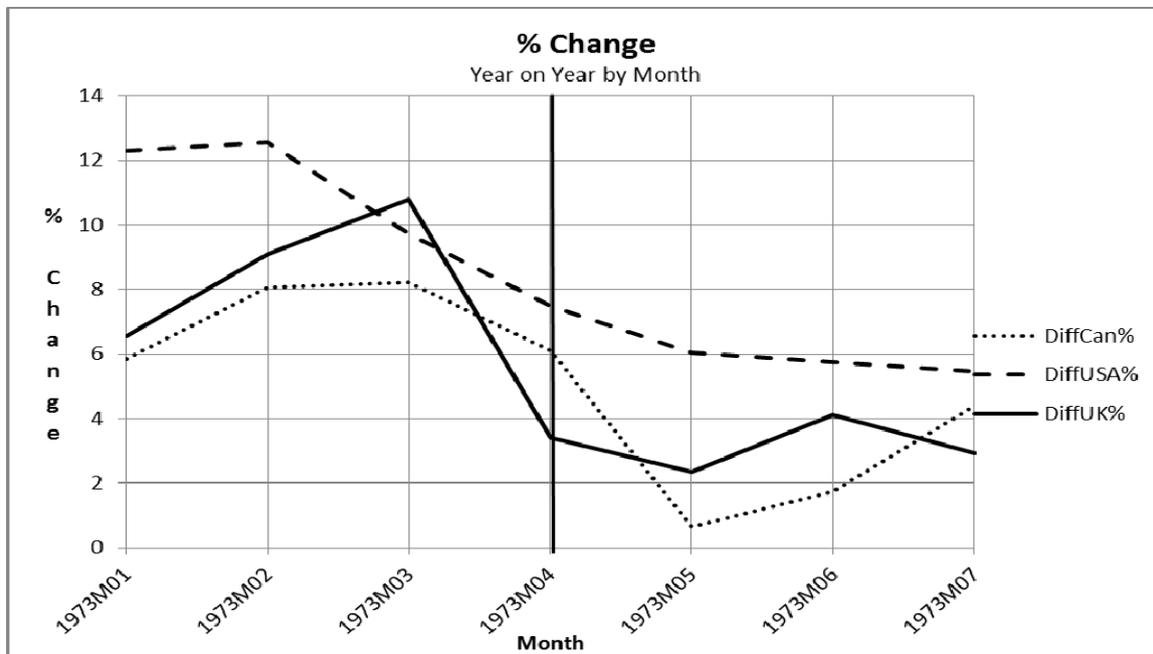


Figure 2. UK introduces VAT April 1973: Percentage change in retail volume from same month of prior year

Here it can be seen that the percentage change in the retail volume from the same month of the prior year is much more substantial for the UK from March to April. There are decreases for both Canada and the US, but these are not as steep. Also, it is noted that the percentage change increased in the months leading up to the introduction of VAT. This is likely to be the result of the early announcement that a VAT would be imposed. Consumers seem to have increased their purchasing in the months before the introduction of the tax and reduced their purchases once the tax was imposed. In other words, consumers seem to have indulged in arbitrage.

The two graphs taken together indicate that the introduction of VAT in the UK caused a timing behavioral change in consumer purchasing decisions. Consumers anticipated the introduction of VAT by making purchases before April 1973. Thus, a drop in purchasing by the consumer occurred at, and after, the introduction of VAT.

Canada introduces GST in January 1991

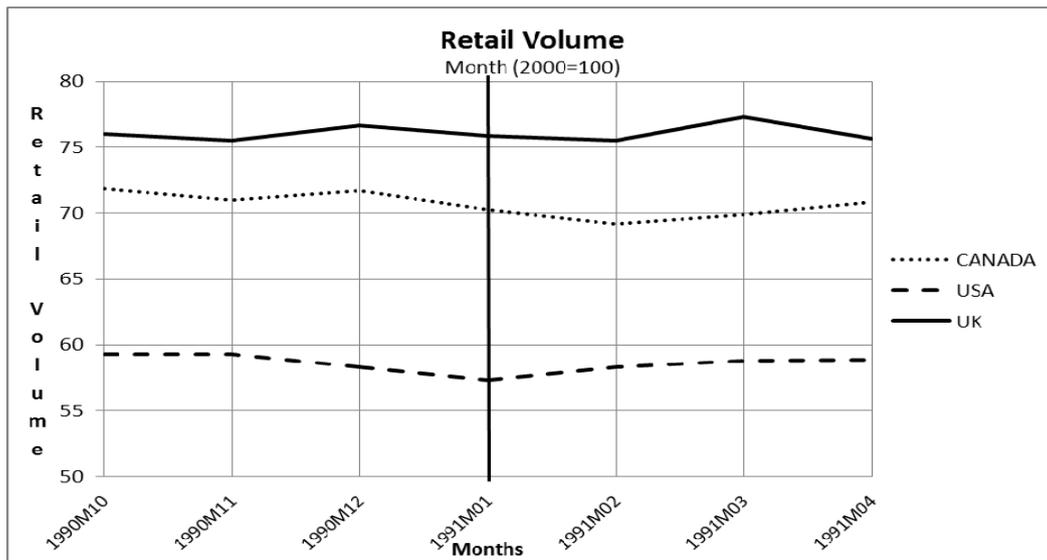


Figure 3. Canada introduces GST January 1991: Retail Volume Index

The introduction of GST in Canada seems to have had a very small effect. The retail volume decreased slightly from December 1990 to January 1991 and to February 1991 before increasing again. However, this is not a different pattern from that shown by the UK or the US (though the US had a small and sustained increase to February 1991 and the next few months). Part of the reason for this lack of effect could be that, since the GST supplanted the MST (of 13.5%), there was no major change in the prices that the consumers saw. Furthermore, the provinces still charged their provincial sales tax and so the GST would have been only part of the overall tax on a product.

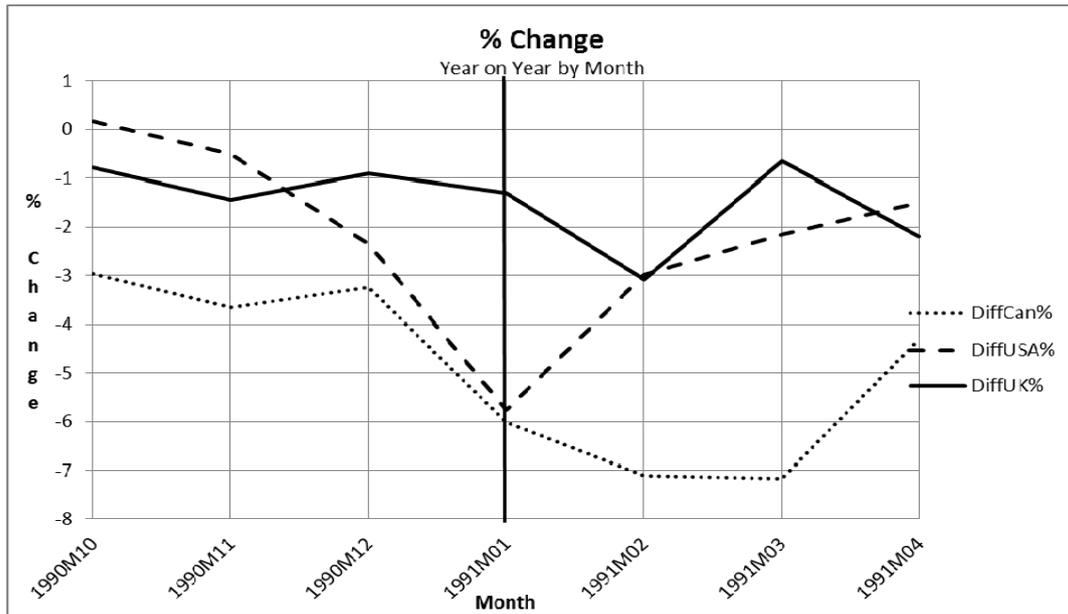


Figure 4. Canada introduces GST January 1991: Percentage change in retail volume from same month of prior year.

Canada shows a substantial drop in the percentage change in retail volume (from the same month of the prior year) from December 1990 to January 1991. This drop continues, albeit less steeply, for the next couple of months before rising from March 1991 to April 1991. The US has a similar decrease from December 1990 to January 1991. However, the US also has declines in the prior months. There is a sharp increase in February 1991 which continues, albeit not quite as steeply, for the next months. The UK has a very small decrease from December 1990 to January 1991.

Thus, it is difficult to state that the drop in the percentage change in retail volume in Canada in January 1991 (when compared to the prior January), was due to the introduction of GST. The similar drop in the US for the same month could mean that there was another confounding factor. Thus, the two graphs do not support the case that the introduction of the GST influenced consumer behavior.

The Change in Vat Rates

The United Kingdom decreases its VAT rate to 8% (from 10%) in July 1974

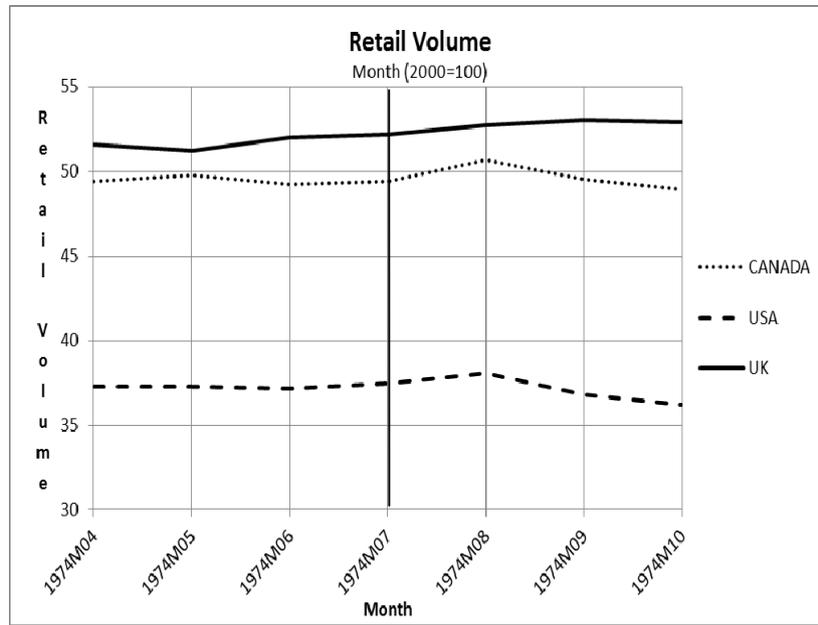


Figure 5. UK decreases the rate of VAT to 8% in July 1974: Retail Volume Index

When the UK reduced the rate of VAT in July 1974, from 10% to 8%, the retail volume showed no major change for that month. It was fairly steady for the months prior and following the change. Both the US and Canada had fairly similar results. Both showed steady retail volumes for the months to August 1974 and then a slight decline after that time. This graph gives no evidence of any behavioral change.

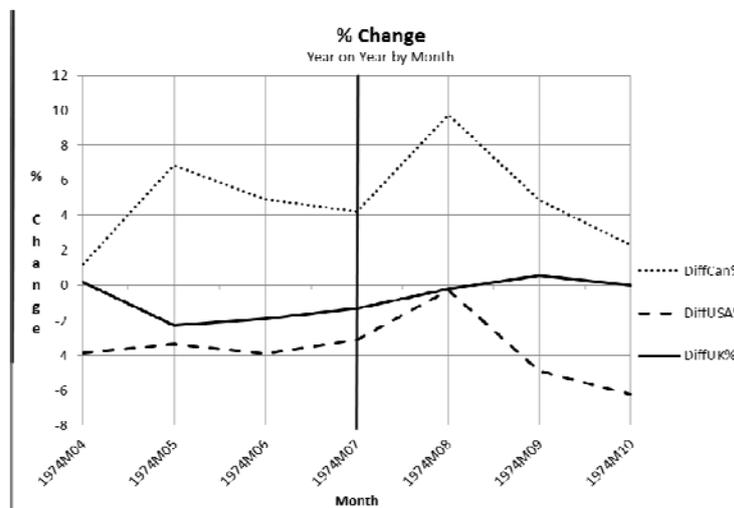


Figure 6. UK decreases the rate of VAT to 8% in July 1974: Percentage change in retail volume from same month of prior year.

Again the change in the percentage change in retail volume from the prior year' month does not seem to be affected by the small drop in the rate of VAT to 8% in July 1974. The line representing the percentage change does is approximately linear from May to September 1974. The US and Canada both have substantial percentage relative increases in July and August 1974. The UK does not have such a sharp increase.

The two graphs do not support the case that the small change in the VAT rate caused any behavioral change in purchasing.

The United Kingdom introduces the higher VAT rate of 25% for luxuries in May 1975

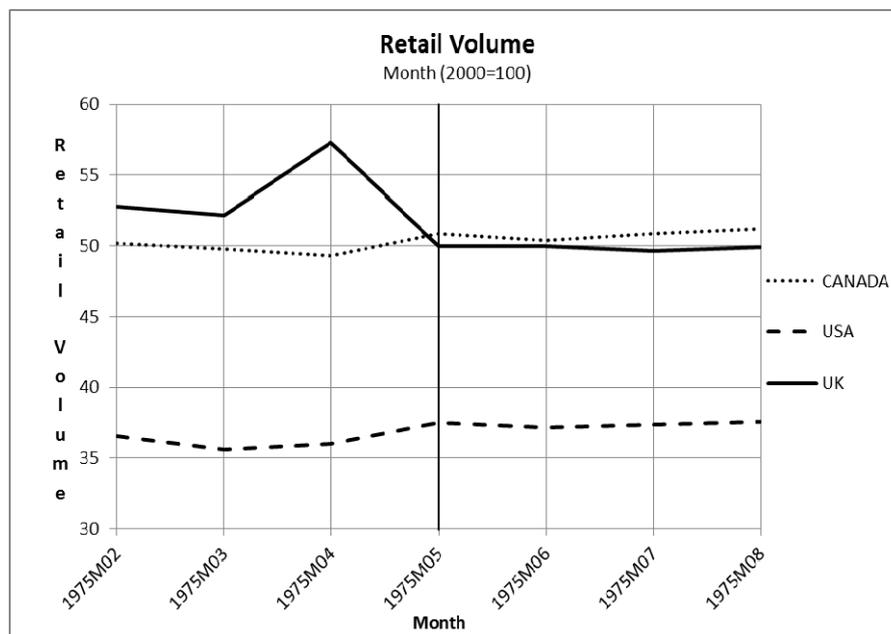


Figure 7. The UK introduces the higher VAT rate of 25% for luxuries in May 1975: Retail Volume

In May 1974 the UK introduced a higher VAT rate of 25% for consumer goods that were regarded as luxuries. Luxury goods were mainly consumer goods such as domestic electrical appliances, radios, TVs and hi-fi equipment, furs and jewellery, as well as services related to them, such as repairs of those items. In the month before the UK introduced the higher rate for luxuries, the retail volume increased substantially. The retail volume after the change dropped in May, the month in which the rate changed and was steady for some months afterwards. This would indicate that consumers anticipated the change by increasing their purchases of these items before the rate change. The UK's graph is in contrast to those of the US and Canada, which had only small movements in retail volume over the period in question.

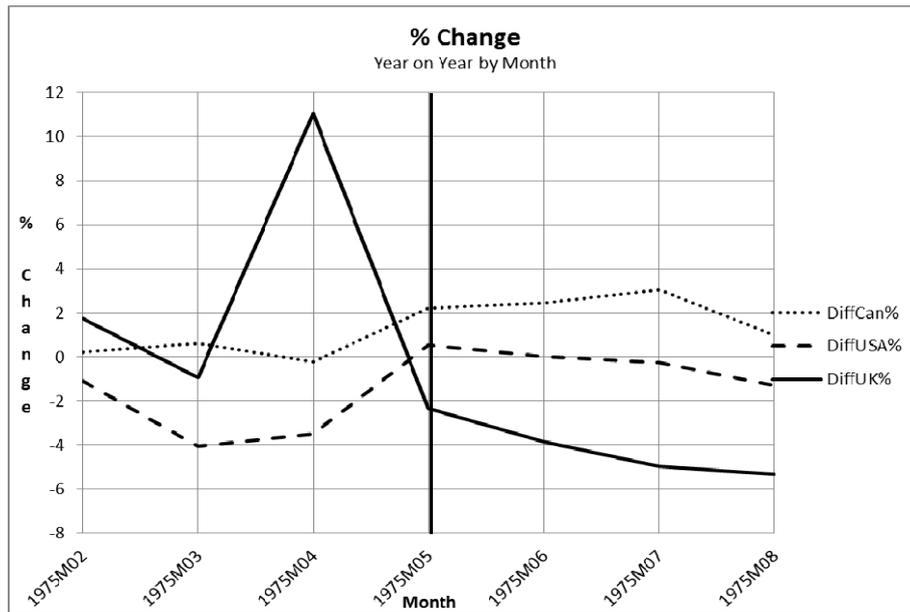


Figure 8. The UK introduces the higher VAT rate of 25% for luxuries in May 1975: Percentage change in retail volume from same month of prior year

In this case the percentage change from the same month of the prior year shows a very similar story to Figure 7 (the Retail Volume). The UK shows a marked increase of more than 10% for April 1975 over April 1974, whereas there was a small decrease in March 1975 (over March 1974). In May 1975 there is a decrease from the same month the previous year (of about 2%). Again, this indicates that consumers anticipated the rate change on luxury goods by purchasing more in April and less after the rate change. The slide in the percentage change continues for the months after May 1975. The US and Canada, again, show very similar graphs to each other with an increase in the relative percentage change in May 1975 and then a small variation in the months after May 1975 (Canada increases slightly then decreases, whereas the US decreases slightly).

Taken together the two graphs show that there was a substantial increase in consumer spending in the month prior to the introduction of the higher rate tax for luxuries. Once the higher rate tax was implemented, spending decreased. This would indicate that consumers again used arbitrage by adjusting their behavior as a result of the new higher rate, even though that higher rate was for a limited class of goods.

The United Kingdom decreases its VAT rate for luxuries to 12.5% (from 25%) in April 1976

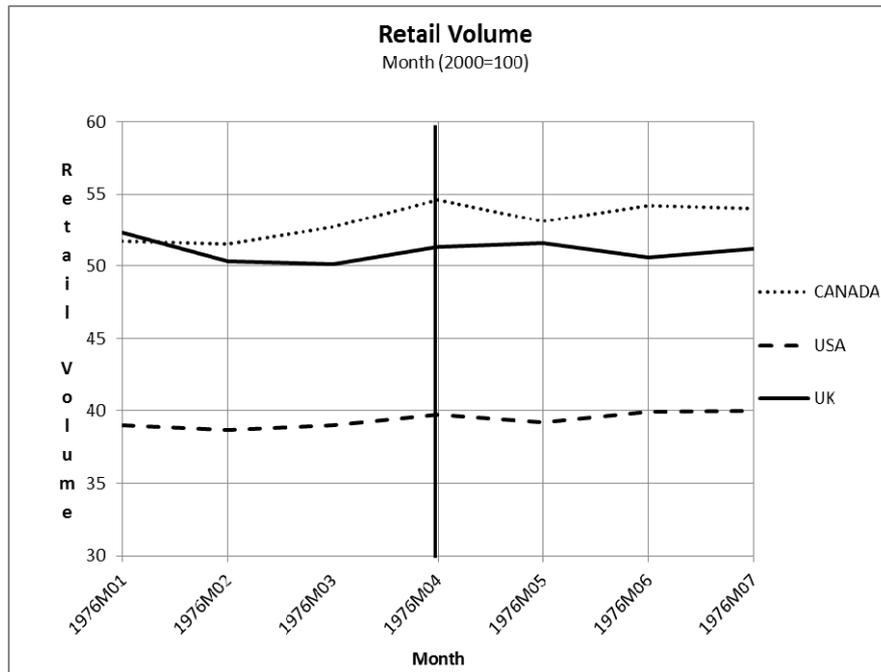


Figure 9. The UK decreases its VAT rate for luxuries to 12.5% (from 25%) in April 1976:
Retail Volume

When the UK reduced the higher rate for luxury goods, the retail volume increased only slightly (from March 1976 to April 1976). This increase was not in any substantial way different for the small increases in Canada and the US. The retail volume increased slightly again from April to May 1976 and then declined for a month. This would indicate that the drop in the luxury goods rate had no differential effect on consumer behavior.

The US had very little variation, whereas Canada did have a small increase in March and April followed by a small decrease in May. Thus, overall there were no major observed differences between the UK graph and the other two countries' graphs around the month that the VAT rate for luxury goods changed.

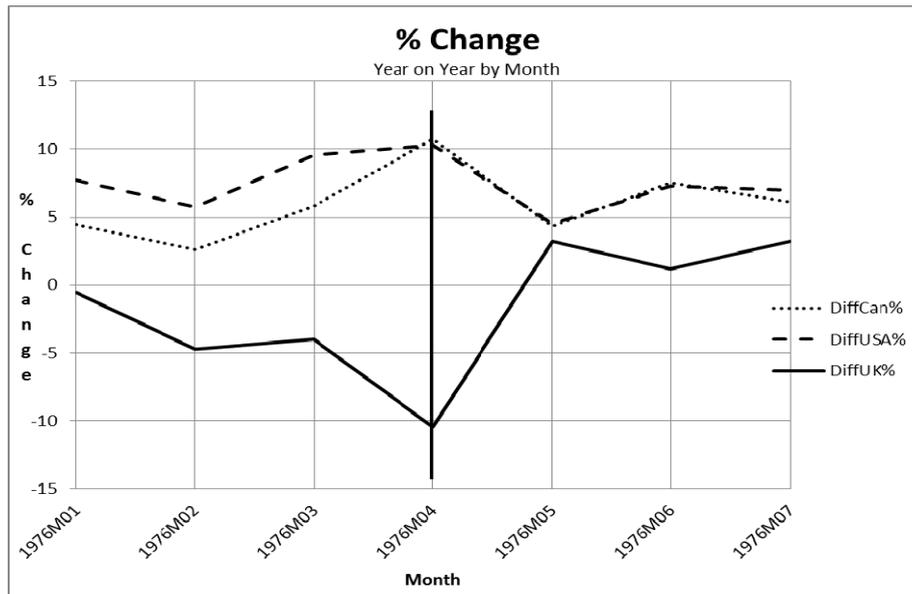


Figure 10. The UK decreases its VAT rate for luxuries to 12.5% (from 25%) in April 1976: Percentage change in retail volume from same month of prior year

The picture given by this graph is substantially different from that given Figure 9. At first sight the observation in the UK that the percentage change in April 1976 - dropping substantially - is counterintuitive. Since the rate of VAT for luxuries was reduced, it would be expected that the percentage change would be increased due to greater consumer spending. However, the percentage change is calculated on a year to year by month basis, thus the percentage change for April 1976 is from April 1975. In May 1975, the rate for luxuries was increased substantially (from the standard/general rate of 8% to 25%). Figures 7 and 8 in the previous section show that in the month prior to that large rate change (i.e., April 1975), consumers increased their purchases substantially. Thus, it would appear that the unusually high retail volume in April 1975 made the comparison with volume in April 1976 a special case and thus lead to the counterintuitive result.

The UK's percentage change in May 1976 shows a marked increase (from - 4.5 approximate in February and March 1976 to + 3.2 in May). Part of this is, again, due to the changes a year before; however, looking at the results for May, June and July 1976, they are much more similar to those of the US and Canada. It is interesting to see that again, where there is no change in the VAT rate in Canada, the results of Canada and the US are very similar.

The United Kingdom increases its VAT rate to 15% in July 1979

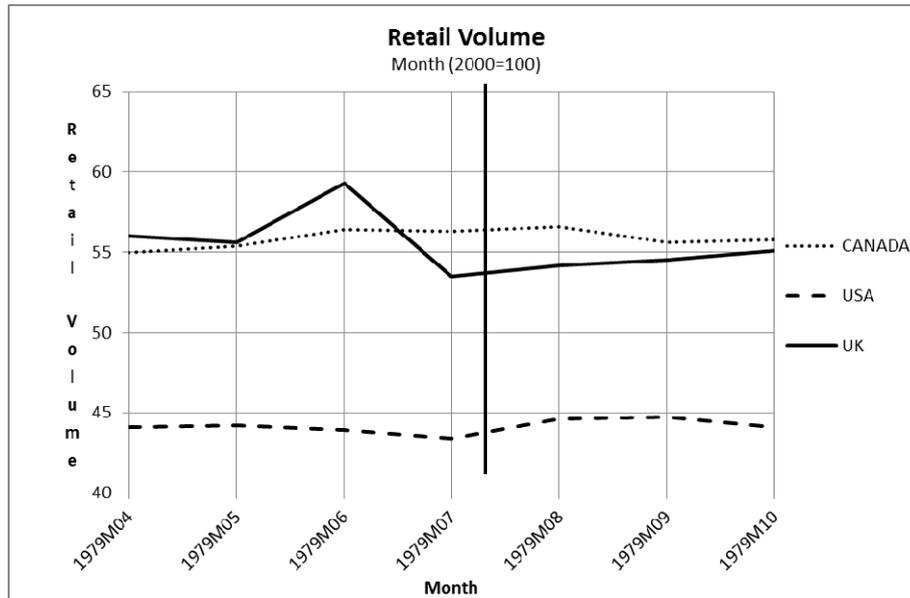


Figure 11. The UK increases its VAT rate to 15% (from standard of 8% and 12.5% for luxuries) in July 1979: Retail Volume

In May 1979, the Conservative Party won the general election and became the government (unlike in the US, the winning party forms the government on the day after the election results are known). In its budget in the middle of June, it announced that it would increase the standard rate of VAT to 15% (and abolish the special rate on luxuries, which at that time was 12.5%). The new rate would be effective about a week after the budget (which would have been in the latter part of June); thus, in this analysis the retail volume of July is used. As can be seen, there is an increase in the retail volume in June (probably in the week between the budget and the start of the new rate).² The retail volume decreased in July. This would indicate that again, consumers changed their behavior by bringing forward their spending. Thus, again, consumers took advantage of the change to indulge in arbitrage behavior. Over the period there is little change in the retail volume of the US or Canada. The consumers in these countries had no reason to alter their buying habits.

² As an anecdote, the author was in public practice in England at the time and, having listened to the budget, did engage in arbitrage by making some purchases in that week to take advantage of the current lower existing VAT rate, rather than later, as originally planned.

The United Kingdom increases its VAT rate to 15% in July 1979

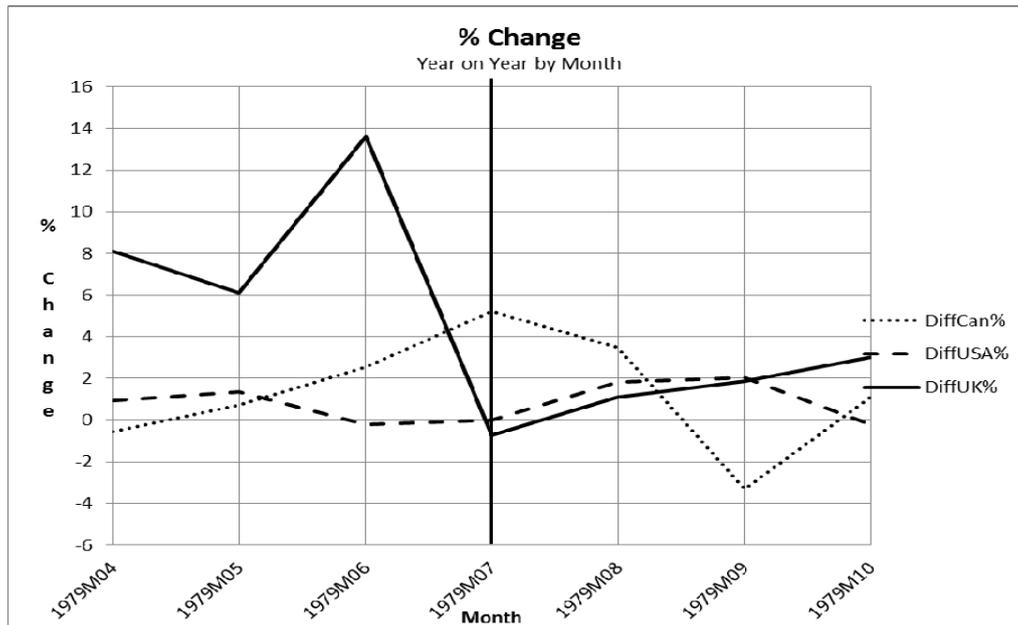


Figure 12. The UK increases its VAT rate to 15% (from standard of 8% and 12.5% for luxuries) in July 1979: Percentage change in retail volume from same month of prior year

The percentage change in retail volume from the year before, shows similar results to that of the Retail Volume graph, above. The percentage change increases dramatically for June 1979 from May and then drops much more to July 1979. This is consistent with the expectation that a large increase in the VAT rates would have on spending habits. The consumers, again, seem to have brought forward their buying.

The US percentage change in retail volume is fairly stable, remaining in the 0 to +2% (approximate) range. Canada, on the other hand, has more variation but not in any way to the same degree as the UK. The two graphs taken together would indicate that the VAT rate increase was a driver of the UK results.

Canada decreases its GST rate to 6% in July 2006

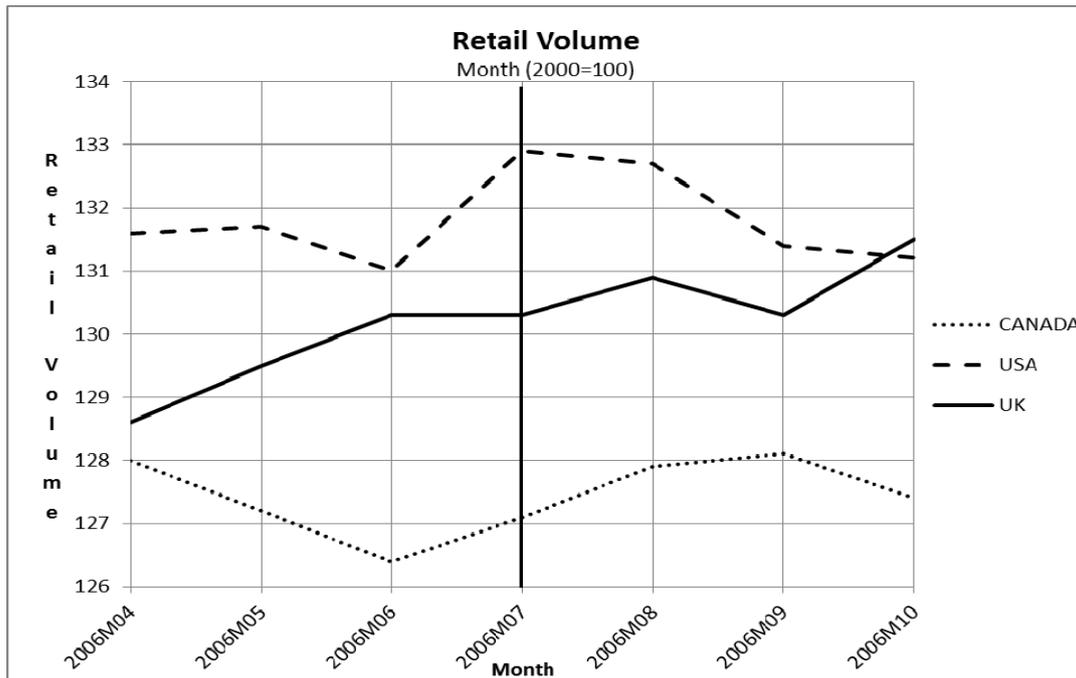


Figure 13. Canada decreases its GST rate to 6% in July 2006: Retail Volume

In July, 2006 Canada reduced its GST rate from 7% to 6%. There is a slight increase in the retail volume from June 2006 to July 2006. This increase continues into August and September. There is a decrease in volume in May and June. The US shows a decrease in retail volume to June and an increase to July followed by a decrease in August and September. The UK has an increase to June, static to July and an increase in August. The US and UK results show no consistent pattern. Since the drop in retail volume for Canada reversed in July 2006, the results could indicate some behavior change due to the small rate change in the GST rate.

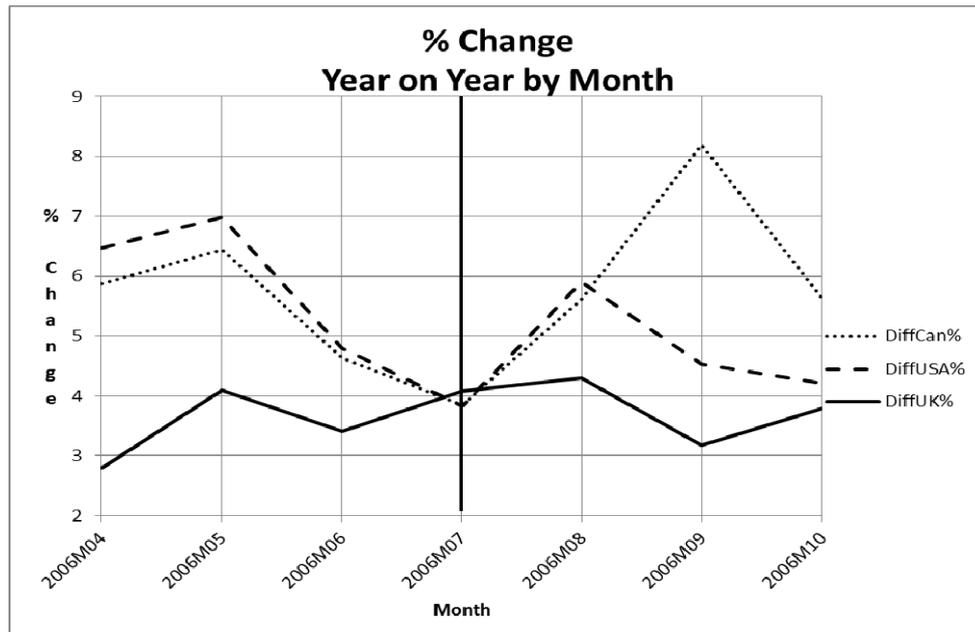


Figure 14. Canada decreases its GST rate to 6% in July 2006: Percentage change in retail volume from same month of prior year

Canada shows a decrease in the relative percentage change from the same month the year before for June and July followed by an increase in August and September. The UK is fairly static over the period, varying between approximately +3% and +4%. These results on their own would indicate the possibility that the drop in the GST rate had an effect on the Canadian consumers' purchasing decisions. However, a very similar pattern to the Canadian graph is seen with respect to the US, though the US has a decrease in September in contrast to Canada's substantial increase in September. Taking the US and Canada together, it is difficult to make a strong case that the change in the GST rate had an impact on taxpayers' buying habits. Taking both Figures 13 and 14 together, the case that the change in the rate of GST from 7% to 6% had effected the buying decisions of consumers is only weakly confirmed.

Conclusion

This paper described the changes in Retail Volume at the time of introduction of a national multi-stage consumption tax in the UK and Canada and at the time of any rate changes in those countries. The US was used for control purposes. Two graphs were used for each change, the first had the Retail Volume in the months and the second graph has the percentage change from the same month a year prior. Whether consumers engage in any arbitrage behavior was examined.

Overall, the introduction of a VAT in the UK showed some behavioral change, whereas the introduction of GST in Canada did not. The result for Canada could have been driven by the

fact that the GST replaced a fairly high (13.5%) existing, albeit hidden, consumption tax. Also, the Canadian provinces (except Alberta) had their own sales tax.

In the UK, most of the rate changes had a behavioral effect. This was evidenced most strongly in the new higher rate of 25% for luxuries in May 1975 and the increase of the standard VAT rate to 15% (from 8%) in July 1979.³ Overall, a strong arbitrage effect was noted.

The UK rate decrease from 10% to 8% in July 1974 did not indicate any behavior change. There appeared to be a behavioral effect for the drop in the luxuries' higher VAT rate to 12.5% in April 1976, when looking at the percentage change graph. However this was counter to expectation. The anomaly was mainly due to the behavioral changes in April 1975, when the higher rate for luxuries was introduced.

In Canada, the GST rate decrease in July 2006, dropping to 6% from 7%, there is a weak case to indicate that consumers engaged in arbitrage by adapting their purchasing timing. This is possibly due to the small decrease relative to the combined GST and provincial sales taxes.

The question arises of how this paper may shed some light on what may occur if the US decides to implement a National multi-stage Consumption Tax. The assumption would be that any such national VAT- like tax would be in addition to, and not instead of, the federal income tax. Both Canada and the UK added their national consumption taxes to their existing income taxes.

The US is more like Canada than the UK, in that it has a federal system, wherein the states (like the provinces) have their own sales tax. Canada did not show any behavioral change on the introduction of its GST. However, since Canada replaced its MST and the US would not be doing the same, direct comparison may not be completely helpful. The US situation would seem to be somewhat in between the UK and Canadian situations. Thus, it is possible that there would be some, though perhaps small temporary behavioral change in US consumers on the introduction of a VAT style tax.

Once a national VAT- style tax is introduced into the US, another question is whether there will be any behavioral changes if the tax rate changes. The analysis of the changes made by the UK and Canada would indicate that there could be some behavioral changes, particularly arbitrage, by consumers. The behavioral change would be more acute where the rate change is substantial, either increased or decreased. The analysis of the Canadian rate change would indicate that any rate change that is small, at least small in relation to the total of the federal VAT and State/local sales tax rates, would result in little or no consumer behavioral changes.

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³ Also, at this time the higher tax on luxuries was abolished, effectively raising the rate from 12.5%.

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