MAGISTERARBEIT

Titel der Magisterarbeit

„Fiscal Policy in United States and Value Added Tax"

Verfasser

Piotr Kwiatkowski Hauglin, Bakk. rer. soc. oec.

angestrebter akademischer Grad

Magister der Sozial- und Wirtschaftswissenschaften

(Mag. rer. soc. oec.)

Wien, September 2010

Fiscal policy in United States and Value Added Tax

Diploma Thesis

author:

Piotr Kwiatkowski Hauglin, Bakk. rer. soc. oec.

23rd September 2010

Universität Wien
Department of Economics
Univ.-Prof. Dipl.-Ing. Dr. Robert M. Kunst
A-1210 Wien
http://univie.ac.at/vwl

Acknowledgements

I would like to thank my PARENTS, my wife HELENE, my sister ALEKSANDRA and everyone who supported me with their kindness.

Contents

List of Figures

List of Tables

Abbreviations

CBO	Congressional Budget Office
CPI	Consumer Price Index
CVAT	Compensating VAT
EEC	European Economic Community
GDP	Gross Domestic Product
GRT	Gross Receipts Tax
GST	Goods and Services Tax
HST	Harmonised Sales Tax
IFS	Institute for Fiscal Studies
IMF	International Monetary Found
IRS	Internal Revenue Service
MST	Manufacturers Sales Tax
NAIRU	Non-accelerating Inflation Rate of Unemployment
NCA	New Consensus Assignment
OBR	Office for Budget Responsibility
OECD	Organisation for Economic Cooperation and Development
QST	Quebec Sales Tax
TRA	Tax Reform Act
UK	United Kingdom
US	United States
VIVAT	Viable Integrated VAT
VAT	Value Added Tax
WTO	World Trade Organisation

1 Introduction

The idea of introducing VAT in United States may not be the most widely discussed one in the news nowadays, but when it comes to a discussion - this frequently turns into stirring debate. As it happens, United States is in the only OECD member that has not yet adopted Value Added Tax on federal level. How has this industrialised nation managed without this from of taxation while since its introduction in late 1950s nearly 160 other countries have already implemented it? This in itself intriguing issue is however further amplified by current economic situation of the US and fiscal obligations of the near future. With shrinking tax base followed by tax cuts, higher unemployment, deficit and post-war 'baby boomer' generation entering retirement age eligible for Medicare and Medicaid Value Added Tax is conceived by many as the only solution to handle such fiscal conundrum. Yet at the same time the very introduction of VAT in the US is considered to be unlikely. Partly because commitment to progressive taxation in the US is of great importance, so it is claimed at least. Commitment to fair taxation and contribution according to individual capabilities is culturally engraved in history of United States. Another, equally important principle laying at the foundation of US doctrine is this encapsulated by George Washington:

> We should avoid ungenerously throwing upon posterity the burdens that we ourselves ought to bear.

This juxtaposition of ideas, its causes and consequences is the leitmotif of this thesis. Chapter 2 is dedicated to fiscal policy. This chapter, apart from laying theoretical groundwork on how fiscal policy works, also emphasises political nature of fiscal policy. Chapter 3 looks at consumption taxes. Focusing naturally on VATs various aspects of this kind of tax are considered, 'money machine' argument being one them. Chapter 4 addresses the issue in the title of this thesis - value added tax in Unites States. Looking especially at Canadian experience with VAT this chapter seeks to describe what should be taken into account when designing US version of VAT.

2 Fiscal policy

This chapter considers fiscal policy and its important implications for the remainder of this thesis. Fiscal policy is essentially a straightforward matter. It is about, as comptroller general of United States and head of the Government Accountability Office David M. Walker defined it, 'how government collects money - mainly through taxes and spends it in government operations, programs and benefits' (Walker, 2009, p. 5). This is however as far as simplicity goes and onerous part begins.

Fiscal policy at its core is composed of two potentially contradictory elements: taxation and government spending. Whereas the latter is unceasingly anticipated by the public, the former frequently faces resistance. Yet for governments taxes represent a lifeblood of a modern state - a famous statesman Cicero is believed to have said that 'revenues were the sinews of the republic' (Eccleston, 2007). So it is today that policymakers manage nations' finances, an act requiring balance between taxing and spending. As one would expect, nothing makes a policymaker more popular than promising new benefits - giving people money is easy, taking it away is difficult (Walker, 2009, p. 47). Schumpeter described raising taxes as 'inherently coercive', yet buttressing nation's viability. Similarly Wood (2009, p. 7) sees history of raising taxes as 'also history of the development of the democracy'. Jean-Baptiste Colbert, Louis' XIV finance minister famously stated that

> the art of taxation consists in so plucking the goose as to obtain the largest amount of feathers with the least amount of hissing (Eccleston, 2007)

This signalises already that it is careful not to view fiscal policy solely from one perspective as it is a resultant of intertwined economical and political considerations.

Over the years many different schools of thought influenced and shaped fiscal or better said, macroeconomic policies of given time, from Classical to Keynesian to New Classical and New Keynesian (Wood, 2009). Exploring in detail how each and particular policy has evolved in surrounding historical context, however interesting, would reach beyond the scope of this thesis.[1] Hence we will focus on more current developments in fiscal (and inevitably and to a certain degree) monetary policy in United States.

---

[1] Interested reader may refer to *A History of Macroeconomic Policy in the United States* by Wood (2009) for comprehensive information on 'interests, ideas, and practices of fiscal and monetary policies'.

2.1 Fiscal policy and New Consensus

This section discusses in further part the New Consensus in macroeconomics, in which the role of fiscal policy as a stabilisation device has receded and given its way to monetary policy. Why has it happened that fiscal policy fell out of use? What were the main arguments held against it? These questions as well as those concerning the actual role of fiscal policy within the New Consensus are analysed.

It has been mentioned before that different macroeconomic principles were in spotlight at certain points in time. Exact borderlines between when one policy had been preferred to the other have not been agreed upon, but that is not the case here. Period of time stretching on one end from Keynes' 1936 publication of The General Theory (or at the latest Paul Samuelson's textbook 'Economics' published in 1948, which gave central role to Keynesian macroeconomics (Krugman, 2005)) to success of monetarism in 1970s and 1980s on the other end is sometimes regarded as hegemony of fiscal policy over monetary policy (Fontana, 2009). Keynesian policy advocated demand management and full employment. Governments facing a recession could boost the economy or slow it down to get away from inflation by respectively choosing the level of aggregate government expenditure and taxes, hence stabilising the demand. It does not mean that monetary policy had been excluded from portfolio of economic instruments - it was used i.e. for credit controls (Allsopp and Vines, 2005, p. 485). In the New Consensus fiscal policy has taken a step back and been assigned with matters of sustainability and inter-temporal equity (Wren-Lewis, 2000). Monetary policy has been accredited with short-run stabilisation in form of price stability in the medium run and as much stabilisation as possible (Allsopp and Vines, 2005). The New Consensus has achieved great amount of popularity. Fontana (2009, p. 28) reports that the IS-LM model, standard tool for analysing effectiveness of both monetary and fiscal policy, is 'slowly but increasingly' being replaced by the New Consensus in undergraduate macroeconomic textbooks.

In the following we take a closer look at fiscal policy and its instruments. We acquire the taxonomy of arguments held against the use of fiscal policy proposed by Blinder (2004) and discuss major points henceforth. In addition we take the role of fiscal policy within the New Consensus under closer scrutiny. Needless to say is that at certain stage consideration of historic circumstances and developments may shed some light on the complexity of the matter.

We briefly describe how fiscal and monetary policies work as found in Allsopp and Vines (2005). 'Traditional' approach to fiscal policy stresses the effects of government spending and taxation on aggregate demand and consequently on output and inflation. Equation 2.1 represents government's budget constraint. The actual instruments of fiscal policy are (T) aggregate taxes and (G) government spending. (D) represents deficit, (iB) stands for

nominal interest payment on outstanding debt (B).[2]

$$D = G - T - iB \tag{2.1}$$

Budget deficits add up directly to government's debt, that in turn is discussed in percentage to Gross Domestic Product (GDP) and $\frac{B}{Y} = b$ debt to nominal GDP ratio. Equation 2.2 thus includes primary deficit in relation to GDP $x = \frac{G-T}{Y}$, $\triangle b$ represents the rate of change in debt to GDP ratio, n is the real rate of growth, π is the inflation and i is the nominal interest rate. Real interest rate r is equal to $r = i - \pi$

$$\triangle b = b(i - \pi - n) + \frac{G-T}{Y} = b(r-n) + x \tag{2.2}$$

In further instance Allsopp and Vines (2005) define primary deficit consistent with no change in b, $x_n = -b(r-n)$ that takes into account primary surplus. In this way $x - x_n = \triangle b$. Next equation (2.3) represents the relation between aggregate demand, fiscal policy and real interest rate. In this form aggregate demand y is set equal to:

$$y = \alpha - \beta r - \gamma_1 x + \gamma_2 b + \delta z + v_y \tag{2.3}$$

where $\gamma_2 b$ denotes wealth effects accruing from government bonds, z represents other permanent demand influences and v_y stands for temporary demand shock. Primary deficit, x is used to catch the effects of fiscal policy. Not without caution, Allsopp and Vines (2005) note that this kind of indicator requires some unrealistic assumptions (i.e. change in taxes leading to same effects as change in government spending), but is done so for expository convenience.

Allsopp and Vines (2005) use three-equation approach to depict targeting inflation using interest rates. With help of exogenous level of capacity output y^* and aggregate demand y from the equation 2.3 output gap can be calculated $(y-y^*)$ and rate of inflation determined. This in turn can be done using modified Phillips curve which charts the change in inflation rate against the unemployment rate.

$$\triangle \pi = \phi(y - y^*) + v_\pi \tag{2.4}$$

In case the rate of inflation diverges from the target, it can be brought back to desired value using interest rate reaction function:

$$r = r_n + \phi(\pi - \pi_T) \tag{2.5}$$

where r_n is the neutral rate of interest. The three equations 2.3, 2.4 and 2.5 represent a system in which policymakers can follow target inflation rate while keeping output and

---

[2]Government deficit can be financed either via government bonds or high powered money, one could rewrite equation 2.1 as: $D = G - T - iB = \triangle B + \triangle H$, but for reasons of simplicity and relatively narrow application Allsopp and Vines (2005) ignore this term.

growth rate at their potential levels, as managed by interest rate reaction function. At this point it is important to make the observation that in order to tackle inflation either fiscal policy or short term interest rate can be used, or both. That means that there is, at least in theory, perfect substitutability between these instruments, with interest rate being the preferred option in New Consensus.

One of the opening question to this chapter asks why has the fiscal policy fallen out of use. As the next section describes theoretical and practical arguments against the use of fiscal policy here some of the historical circumstances surrounding the move to monetarism shall be briefly described. Fontana (2009), after Blinder (2004), looks back to the time of president Lyndon Johnson (1963-69). This was the time of significant rise in public spending due to Vietnam War with economy at almost full employment. President Lyndon Johnson put off the decision to either raise taxes or reduce spending until 1968 (or strictly speaking 1967, with Congress needing further 18 months for approval), when taxes were raised. This rise in taxation did not affect consumer spending and consequently did not bring the rate of inflation to a halt.

With this preliminary framework in mind we shift our focus in the next section (2.2) to main points of critique of fiscal policy and what has led to interest rate being the preferred alternative to fiscal instruments. Section 2.3 takes a look at the role of fiscal policy in the New Consensus.

2.2 The case against fiscal policy

In this section we investigate main arguments that have been pointed out as downside of fiscal policy. To give our analysis structure, we follow an approach from Blinder (2004), where two main categories of arguments against fiscal policy are outlined: practical/political and theoretical/economic arguments.

Arguments in the practical/political group question the actual use of fiscal policy, whereas the theoretical/economic group challenges rather the effectiveness of it. This division serves just the expository purpose here as in reality points from both of the groups are very much intertwined with each other.

One frequently mentioned argument is that fiscal policy takes long time to work, shortly subsumed under 'lags'. Lags are outcome of the time that passes from when fiscal action is needed and when its results are visible. Krugman (2005, p. 517) describes this notion in a following way: '...fiscal policy is clumsy and takes so long to implement that expansionary measures end up feeding a boom rather than fighting a recession'. This characteristic of fiscal policy stems from its very core, its two instruments: government spending and taxation. Both of these are subject to legislature changes, which in turn take time till e.g. appropriate bill is passed (and that can be the case even when 'modicum

of bipartisanship and good will is provided'(Blinder, 2004)). Monetary policy scores here as more flexible where interest rates can be altered frequently and easily. Furthermore, changing interest rate is less costly than changing fiscal policy (Allsopp and Vines, 2005). By the same token it has been observed that delegating monetary policy to independent central banks does not pose as much difficulties as doing so with fiscal policy would lead to. Delegating monetary policy to independent central banks does not only depoliticise the whole process, but is also a matter of capacity constraints. Solow (2005) points out that legislature is behind central banks with regards to professional staff and ability not only to more accurately forecast economic activity, but also to amend mistakes if needed. How much government should spend and how should it tax its citizens differs significantly along political spectrum. Ronald Reagan's often repeated phrase claimed that 'Democrats like nothing better than to tax and spend'(Shaviro, 2007, p. 5). Akitoby and Stratmann (2008) examine if financial markets are affected by interaction of fiscal variables and political institutions. Results of their study show that there is evidence that financial markets favour right wing regimes (that usually connote smaller government and fiscal conservatism) and disadvantage left wing governments for their current spending driven expansion (larger government and broad social programmes).[3]

Fiscal policy is inherently political and therefore embodies the risk of political parities not doing the right thing for the sake of economy but what their doctrine tells them. Solow (2005) described this issue with focus on United States in quote below:

> Deep down, the problem is to keep low politics out of discretionary fiscal policy. This problem is more acute for an American than for a European, because our Congress has no party discipline. Whenever the tax system or the budget is opened up for change, the lobbyists and special interests descend like locusts.

It is something worth remembering and keeping in mind as the later discussion about Value Added Tax in United States bears similar connotation. Not to forget that cutting taxes is more likely to be popular than raising them (e.g. in case of a recession or boom respectively). Policymakers having fiscal policy at their discretionary disposal may contribute to an increase in government debt, and hence to lessening long term sustainability (Wren-Lewis, 2000). Whether a country becomes susceptible due to its external debt depends for sure which country it is. Walker (2009) brings back a story from 1956 when US had control over 'the bulk of Britain's foreign debt' and could successfully exercise influence over the British and French. By threatening UK to sell off substantial amount of British pounds held (which undeniably would lead to depreciation it), president Eisenhower demanded the French and British to withdrawal from contending for control of Suez Canal with Egypt (Walker, 2009, p. 37). Is current (federal) US deficit, which is likely to stay above 10% of GDP in 2010 (OECD, 2010b), making it susceptible? That most probably remains to be seen. It should be stressed yet again that decision whether to

---

[3]It has to be mentioned that according to the results financial markets also give premium to left wing governments when their revenue increases.

sponsor government programme by taxation or debt is driven by political interest. Munger (2004, p. 246) notes that even if the Barrovian principle of economic equivalence is taken as valid, taxes and debt remain 'radically different' and of these two the latter is usually preferred.

The Barrovian logic of economic equivalence is explained in the next section devoted to theoretical/economic arguments against fiscal policy.

Arguments belonging to the theoretical/economic group, of which the Ricardian equivalence is mostly discussed, put the effectiveness of fiscal policy in question. Arestis and Sawyer (2006) note that Ricardian equivalence is one of three arguments generally related to as 'crowding out'. First form of crowding out has a rise in interest rates as a result of fiscal expansion. Higher budget deficits may give rise to interest rates and private saving. According to the second form of crowding out there is so called supply-side equilibrium (natural rate of unemployment or NAIRU - non-accelerating inflation rate of unemployment) that acts as main driver to the level of economic activity and which is, according to this theory, not responding to the level of aggregate demand. The remainder of this section concentrates on Ricardian proposition.

Ricardian equivalence has been named after English economist David Ricardo, who as a matter of fact, did not believe in it himself (Blinder, 2004). This proposition was popularised by Robert Barro in 1974 in his paper *Are Governments Bonds Net Wealth?* According to adherents of this proposition, fiscal policy is not capable of influencing aggregate demand (and as a result the level of income and employment) and therefore ineffective. The total demand level in the economy stays the same disregarding whether government finances spending with increase in taxes or debt. Increase in taxes poses a tax burden at the time of this increase. When it comes to debt, the tax burden is twofold - while the borrowing is outstanding, government has to have enough to pay the interest and in the end enough to repay the loan (Allsopp and Vines, 2005). Ricardian households, in case of tax-financed government spending, counterbalance higher tax rate by saving more now. They are also saving more now in anticipation of higher tax rates in the future as government has to repay the its loans. As a result increased government spending is met with decreased consumption in the private sector and so the total level of demand in the economy stays the same.

Ricardian equivalence has been much debated, analysed, both theoretically and to a certain degree in empirical studies. Similarly to fiscal policy, Ricardian equivalence faces some strong theoretical objections. These regard the underlying assumptions and conditions in which complete offsetting behaviour in private saving as a response to change in taxes is observed (OECD, 2004). What follows is a short explanation of Ricardian equivalence and evaluation of objecting arguments thereof, drawing on Blinder (2004) and a brief description of an empirical approach conducted by OECD on that very matter.

Ricardian household's spending decision are based only on present value of it lifetime resources. In equation 2.6 A_t stands for current net worth, y_{t+i} represents future net earnings, δ^i is the discount factor for cash flows at $t+i$.

$$W_t = A_t + \sum_i \delta^i y_{t+i} \qquad (2.6)$$

A bond-financed cut in taxes of the size $\triangle y$ lifts current receipts to $y_t + \triangle y$. Remembering that taxes have to rise some time in the future in order to repay the loan, the present value of this rise in taxes is equal to $\triangle y$, leaving W_t in the end unchanged. First of what is often regarded as 'unrealistic' assumption of Ricardian equivalence involves positive transfers to future generation based on altruism. Consumers of today think about their devisees and balance bequests accordingly. Blinder (2004) considers this intergenerational aspect as mostly irrelevant, as majority of issued bonds have maturity of ten years. Within this time many of the today's taxpayers would still be alive. Next objection touches on liquidity constraints, or actually lack of such. In case where current household budget is constrained so that current income is more important than future inflows of it, debt financed tax cuts would lead to rise in spending. Wren-Lewis (2000) reports that allowing for credit-constrained consumers definitely increases the impact of tax changes, with change in indirect taxes having more effect on demand stabilisation than changes in income taxes. Another argument regards planning horizon and respective interest rates for discounting future flows of income. Households may not use as long, far sighted time range for planning current consumption as 'Economic Man' probably would. Using higher interest rates for discounting future inflows means that households would value current rise in income (due to tax cuts) more than fall in future income. If the interest used for discounting future income is higher than government bond rate, rise in consumption may be observed as present value of purchasing power gained is greater than this of purchasing power lost (Blinder, 2004, p. 19). Furthermore underlying assumptions include existence of perfect credit markets, certainty about future level of taxes and income and non distortionary taxes. Blinder (2004) lists one more condition, the so called present value government budget constraint. This constraint requires today's deficit to be repaid as there is a upper bound for how high and how long deficit can go on. It is this condition where the temporality of income tax changes stems from. Taking current level of US debt into account this constraint remains a 'theoretical nicety'.

Kirsanova et al. (2009) call Ricardian equivalence a 'purely and hardly definitive macroeconomic theory, as it only considers income effects of tax changes while not taking other aspects of fiscal policy and their effects into account'. Interestingly enough Solow (2005) reports that United States with its massive budget deficits and personal saving rates close to zero is not very supportive environment for Ricardian equivalence. Even when the aforementioned conditions for debt neutrality are hard to find in reality, partial offsetting may still take place.

In 2004 OECD included in its Economic Outlook series an approach to roughly calculating the direct effects of budget deficits in saving. This section briefly describes this approach.

Using panel data analysis OECD decided to test the existence and extent of how private saving counteracts changes in public saving. Data used included sixteen countries for years 1970 to 2002. In reduced-form error correction procedure private saving is regressed on public saving. Equation 2.7 represents saving equation with S_{it}^{priv} as private and

$$S_{it}^{priv} = \alpha_0 + \alpha_1 S_{it}^{pub} + \alpha_2 X_{it} + e_{it} \tag{2.7}$$

$$\triangle S_{it}^{priv} = \beta_0 + \beta_1 \triangle S_{i,t-1}^{priv} + \beta_2 e_{i,t-1} + \beta_3 \triangle S_{it}^{pub} + \beta_4 \triangle X_{it} + v_{it} \qquad , \beta_2 < 0 \tag{2.8}$$

S_{it}^{pub} public saving ratio in country i at time t, e and v represent disturbance terms, X_{it} stands for vector of control variables and $\triangle$ is first difference operator. By solving 2.7 for $e_{i,t-1}$ and replacing this term in 2.8 both equations can be estimated together:

$$\begin{aligned} \triangle S_{it}^{priv} = (\beta_0 - \beta_2 \alpha_0) + \beta_1 \triangle S_{i,t-1}^{priv} + \beta_2 S_{i,t-1}^{priv} + \beta_3 S_{it}^{sub} - \beta_2 \alpha_1 S_{i,t-1}^{pub} \\ + \beta_4 \triangle X_{it} - \beta_2 \alpha_2 X_{i,t-1} + v_{it} \end{aligned} \tag{2.9}$$

which enables putting variables of the estimating equation in first differences and lagged levels. Table .1 is included in the Appendix and contains main findings. Using this approach OECD was able to show that direct offsetting movements in private savings can take significant value. The direct short term private offset, according to this study, is estimated at one half and rising to 70% in the long run. What would be of greater interest for this thesis is question about possible country specific differences in offsetting behaviour. In order to test this the counter cyclically adjusted budget balance, as a measure of public saving, was checked with a dummy variable, '1' and '0' for given country and all other countries respectively. For United States the private saving response has been found to be positive, which can be seen in Table 2.1. Authors of the study advice caution however, as it is hard to indicate why the response in the US is positive and offer two possible explanations. One way to interpret this value is to say that there is a strong confidence that the deficit does not directly lead to higher taxes or there might be an unknown link between positive wealth effects and the deficit. With regards to the former one could risk a theory that no presidential candidate in the US includes higher taxes in his manifesto, as doing so would lessen his chances of actually becoming a president. Breaking a presidential promise is bound to face reprimand from the public.

Having taken a look at both theoretical and practical argument(s) against the use of fiscal policy we continue in the next section with the discussion on the role of fiscal policy within the new consensus and conclude this chapter on fiscal policy.

Dependent Variable: Private Saving (in per cent of GDP, National Accounts definition):[a]

	Private saving	Net lending		Net lending times country dummy
	Lagged level	Lagged first difference	Lagged level	Lagged level
Canada	-0.27^{***}	-0.51^{***}	-0.21^{***}	0.10
France	-0.27^{***}	-0.51^{***}	-0.19^{***}	0.07
Germany	-0.27^{***}	-0.51^{***}	-0.19^{***}	0.00
Italy	-0.27^{***}	-0.51^{***}	-0.19^{***}	0.04
Japan	-0.27^{***}	-0.51^{***}	-0.19^{***}	-0.03
United Kingdom	-0.27^{***}	-0.51^{***}	-0.18^{***}	-0.17
United States	-0.29^{***}	-0.51^{***}	-0.22^{***}	0.44^{***}

[a]   All models are estimated using the Arellano-Bond difference-GMM estimator and include a common intercept and the full set of controls (not reported). (***) denotes statistical significance at the 1 per cent level. The null hypothesis of the Sargan tests for over identifying restrictions is never rejected at classical levels of significance. There is no evidence of second-order serial correlation in all models.

Table 2.1: Response of private saving to fiscal stance: selected countries (OECD, 2004, p. 152)

2.3 Fiscal Policy within the New Consensus

In section 2.1 fiscal and monetary framework was outlined. We use it in this part to elaborate on the actual role of fiscal policy in the current system, where monetary instruments are preferred. In order to do this two more equations need to be considered in addition to 2.3, 2.4 and 2.5. First is the debt accumulation relationship (equation 2.2) allowing for debt to accrue over time. Completing these four equations is so called fiscal policy reaction function, which primarily makes sure that budget debt is not allowed to increase indefinitely. Allsopp and Vines (2005) formulate therefore a negative feedback from the debt ratio to fiscal instruments with b_T as target debt ratio and

$$x - x_{nT} = -f(b - b_T) \tag{2.10}$$

and x_{nT} standing for primary deficit at the target debt ratio. When put this way, fiscal policy responds to what is expected of it - providing sustainability. The term sustainable itself can be interpreted in myriad of ways. What sustainability means in practice depends on the fiscal authorities setting the actual policy, how they construe debt targets and possible economy outcomes of such. Soon after the elections in May 2010 the newly chosen coalition government in United Kingdom announced 'emergency budget' projecting cuts in public spending and higher taxes. Labour (opposition) condemned this budget proposal. In Labour's view this budget is driven mostly by Tory doctrine rather than by nation's interests. Nevertheless within the New Consensus monetary authorities take account of actions fiscal authorities' actions. Allsopp and Vines (2005) see here clear distinction of
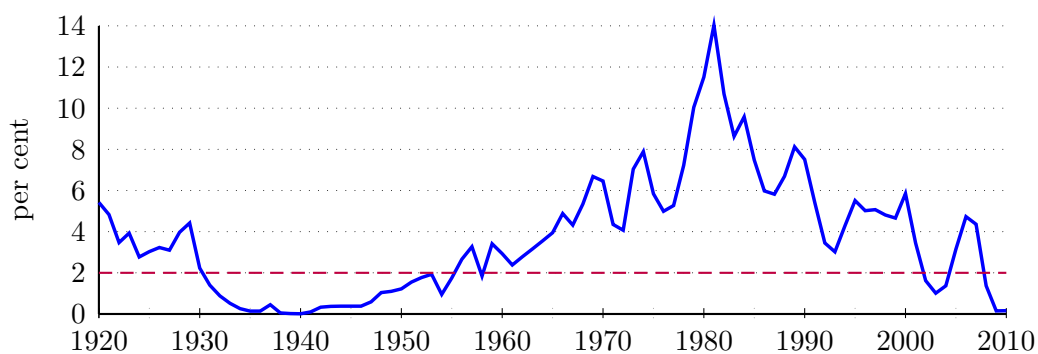
Figure 2.1: Interest rate on 3-month US Treasury Bills since 1920 (Krugman, 2005)

roles between fiscal and monetary policies, the former being responsible for general level of interest rates and the latter for the course of inflation and the output gap. This division of responsibilities does not praise one policy over the other, but rather points out in direction of needed coordination between those two. So, what might be seen as a turning point, one could say that fiscal policy macro economically indeed does matter, even within the New Consensus - it just has clear competences. Firstly it has an effect on interest rates. Reducing debt leads to lower debt ratio b, which may lead to wealth effects in 2.3. This in turn causes negative pressure on output debt and monetary authorities, which look over the output gap, in order to keep the demand have to adjust the neutral rate of interest r_n downwards.

As a second major area where fiscal policy is given more confidence to monetary policy is in response to large shocks - circumstances with which monetary policy would find it hard to deal on its own. Such circumstances would include extremely long or deep (or combination of both) recession, nominal interest rates approaching zero and when significant weakness in aggregate demand becomes quickly apparent (Blinder, 2004, p. 39). Especially when nominal interest rates are close to zero, Krugman (2005) sees fiscal policy coming to play main role, as 'central bank loses most of its control over monetary aggregates' and neither output gap nor inflation can be influenced via monetary policy reaction function. The danger looming in such a situation is a downward slump as interest rates are not likely to create any upsurge in demand. Fiscal instruments have to be used not only in a right way, but also in a timely manner as the case of Japan shows. It is greatly thanks to the case of Japan why Krugman (2005) looks forward to fiscal policy coming back from its bad repute. He goes on to say that, based on the course of 3 month US Treasury bill, whenever the rate was lower than 2% macroeconomists preferred fiscal to monetary policy. With interest rates on the three month US Treasury bill above 4% 'Fed ruled and fiscal side was unnecessary'(Krugman, 2005, p. 520). Figure 2.1 shows how this interest rate has evolved from 1920 until recently.

In this chapter certain aspects of both fiscal and monetary policy have been discussed. Beginning with basic frameworks an attempt was made to critically assess fiscal policy. The theory behind the use of fiscal policy has seen up- and downswings in popularity. At one time it ruled, just couple of decades later to be called unnecessary and gave its way to adherents of monetary policy. It helps to look at the two policies through the scope of historical circumstances. Yet as important it is, in my opinion, to sometimes disentangle them and take solely under scrutiny. From this discussion it appears to me that neither fiscal nor monetary policy can fully do the job of running and managing the economy on its own. There might be situations when one is more appropriate to the other. One of them, which is not delegated to central banks, is prone to find itself in the middle of political debate and being dragged from one end of political spectrum to the other. As a possible solution an independent body outside of the government has been proposed. It would have two main objectives. First to advise on short term discretionary activities and second to overlook long term sustainability (Wren-Lewis, 2000). The way that emerges to be capable of of grasping intertwined and complex scope of economy is placed somewhere between the two extremes, no matter whether such an independent body is established or not. A sign of things slightly moving in that direction could be seen in the fact that the chancellor of the exchequer of the newly elected UK government George Osborne, has signed the economic and fiscal forecasting off to an independent Office for Budget Responsibility (OBR). The chancellor has nevertheless the final say about fiscal policy (Anonymous, 2010). Well meant and open coordination between fiscal and monetary authorities is therefore broadly advised.

In the next chapter we take a look at Value Added Tax. This is relatively young form of taxation which has spread over to many countries in relatively short period of time.

3 Consumption taxes

All governments impose taxes on citizens in order to raise funds required to finance public spending, should it be schools, roads or social security. Governments differ however in what kind of taxes they have chosen to levy, how are these different forms of taxation implemented and thus what kind of effect on people they have (OECD, 2007a). This chapter looks into one specific form of taxation on consumption - Value Added Tax[1] (VAT). This tax has become very popular in relatively short period of time. Many countries have adopted VAT to see a large share of their spending financed by this tax. It is therefore crucial to see what lies behind the facade of this 'attractive' tax, which was called by one senior official of International Monetary Found as *Mata Hari of the tax world - many are tempted, many succumb, some tremble on the brink, while others leave only to return, eventually the attraction appears irresistible* (Schenk and Oldman, 2007).

Earliest forms of taxation were levied mostly on land and agricultural produce thereof, as it was both visible and collectible representation of wealth. With growth of trade taxes on imports and exports were also introduced. At the time when firms organised into companies and enterprises a tax on business turnover became popular. Every time a good was processed along the supply chain from manufacturer to wholesaler to retailer a cascading turnover tax was imposed, which in turn could not be claimed back from the purchaser. This cascading characteristic of business turnover tax posed a strong incentive for companies to integrate vertically and take advantage of tighter organisational structure. What followed was an improved or 'refined' version of turnover tax, which was based on value added concept. According to this concept tax on sales would be reduced by amount of tax paid for business inputs (Schenk and Oldman, 2007, p. 4). This concept evolved in further instance to multistage VAT. A single stage tax on consumption was rather seen as a phase preceding the move to VAT, with notable exception of United States. Ironically enough, United States where VATs had their origins in the early 1920s (Eccleston, 2007, p. 42), remains to this date as the only OECD country without federal value added tax.[2] One way to look at different kinds of taxes is to distinguish between direct and indirect taxes. The former is levied directly on income base and wealth whereas the latter is imposed on expenditures financed by this wealth (OECD, 2008a).[3] This distinction

---

[1] VAT is also known as Goods and Services Tax (GST) - here those two terms will be used interchangeably

[2] United States still have to consider VAT when exporting and importing to countries with VAT in place. Some of the states have introduced VAT-like forms of taxation. Chapter 4 explores the case of consumption tax in United States in more detail.

[3] According to World Trade Organisation, direct taxes are taxes on wages, profits, interests, rents, loyalties, and all other forms of income, and taxes on the ownership of real property. Indirects taxes include

between taxes on income and on consumption is crucial for the remaining part of this thesis, as it represents two different directions of how fiscal policy can be interpreted. At first glance, tax on income may seem to be deeply embedded in history and culture of some countries, especially United States, where at least an appearance of great commitment to progressivity of taxes is kept up to this day. With consumption tax being relatively recent development it is noteworthy that the idea of consumption as a tax base was already mentioned in 17th century in *Leviathan* by Thomas Hobbes. As we have seen in previous chapter, fiscal policy is a highly politicised subject which frequently is set to align with prevailing preferences and values of given political fraction, so some caution in this debate between consumption and income taxes is well advised.

In following part an overview of consumption taxes is provided. We will be looking at how they have spread, what role do they play in finances of countries that have acquired VAT/GST. This will allow us in further part to draw a short comparison between income and consumption taxes. We keep our focus on VAT as consumption tax and look in the final part of the chapter into discussion of it being a 'money machine'.

3.1 Value Added Tax

We begin with basic nomenclature of consumption taxes as statistically used by the OECD.[4] From general consumption taxes, to which VAT, GST and sales taxes belong, one has to differentiate taxes on specific goods and services i.e. excise taxes. The latter comprise of excise duties on items like tobacco, vehicle fuels, alcohol and also taxes on special insurance and financial operations. Apart from obvious revenue raising function of excise taxes it is common to refer to them as a way in which governments can influence certain behaviour like reducing consumption of tobacco (OECD, 2008a).

Value added tax is the most omnipresent consumption tax. It is collected at every stage of production so it means it is levied on a broad base - all commercial processes needed to produce a good or service. It is aimed at taxing final consumer's expenditure. OECD (2008a, p. 23) points at possible misinterpretation of the word 'consumption', which is not to be taken literally as use of a good or service. Instead one should think of *expenditure in order to attain consumption*. This very fine distinction in terms to most taxpayers may seem without great difference at first sight, is meant for determination of where to impose tax in cross-country transactions. Business sector is eligible for refund on intermediate transaction, so input tax on purchases is deductible from amount of tax from sales. These are the main features of value added tax. For the topic and scope of this thesis it should suffice to say that there are two main approaches of how the tax can be collected: invoice credit- and subtraction method.

---

taxes on sales, excise, turnover, value added, franchise, stamp, transfer, inventory and equipment taxes, border taxes and all other than direct taxes and import charges (Schenk and Oldman, 2007, p. 6)

[4]OECD distinguishes six broad categories: taxes on income, profits and capital gains, social security contributions, taxes on payroll and workforce, property taxes and taxes on goods and services (OECD, 2008a, p. 22)

	1965	1975	1985	1995	2006
Personal income income tax	26.2	29.8	29.7	27.1	24.8
Corporate income tax	8.8	7.6	8.0	8.0	10.7
Social security contributions	17.6	22.0	22.1	24.7	25.3
Payroll taxes	1.0	1.3	1.1	0.9	0.9
Property taxes	7.9	6.3	5.2	5.5	5.7
Taxes on goods and services	38.4	32.8	33.7	32.4	31.5
of which, VAT and sales taxes	13.6	14.5	16.4	17.7	18.9

Table 3.1: Revenue shares of major taxes in the OECD area (unweighted average) (OECD, 2008a, p. 47)

It has been mentioned before that VAT has spread rapidly over last decades and been acquired in many countries. This shows a trend that countries look at taxing consumption as valuable part of their tax-portfolio. It has grown, with regards to revenue raised in OECD countries, into one of the three most important taxes (OECD, 2008a).

For the year 2006 almost one third of tax revenues (as a percentage of aggregate taxation) came from consumption taxes, of which more than a half stems from VAT and sales tax (OECD, 2008a). Even though this is an unweighted OECD average it does allow a careful supposition, that consumption taxes are responsible for lion share of tax revenues. With 29 out of 30 OECD countries having adopted VAT one has to certainly look at each country individually as different rates and varying range of exemptions are used. Looking at how revenues from consumption taxes have developed over the years in OECD countries one can notice that consumption taxes as percentage of total taxation have actually fallen together with taxes on specific goods and services. Taxes on general consumption however have risen as a percentage of total taxation from 13.6 in 1965 to 18.9 percent in 2005 (OECD, 2008a). This rise is on one hand explainable by successive adoption of VAT among OECD countries over the time. From other main categories of taxes only corporate income tax and social security contributions have increased their share over the same period. Share of personal income tax rose from 26.2% to 29.7% just to fall later to 24.2%. Table 3.1 and figure 3.1 represent these developments for years 1965 to 2006.

Tables .2 and .3 included in Appendix contain OECD wide comparison of taxes on general consumption. Table .4 gives an overview on historical and current rates of VAT/GST in OECD member countries.

When comparing VAT rates among countries it is important to remember that member countries of the European Union have to regard EU directives (i.e. VAT Directive 2006/112/EC). Nevertheless a wide array of lower or zero rates have been granted in many countries, covering from basic an essential products and services like food, hospital care, to utilities (public transport) or geographic areas. Main reason behind such exceptions is to promote equity and minimise the regressive effect of consumption taxes on household budget. This points builds also the core argument of opposition towards the
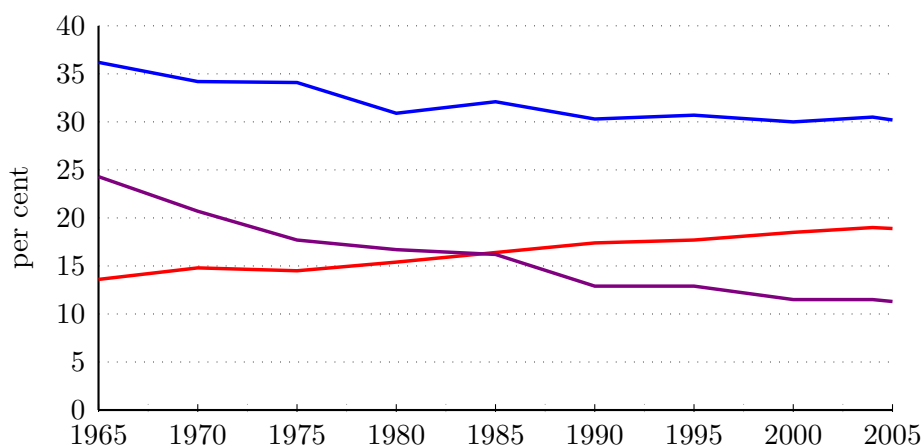
Figure 3.1: Share of consumption taxes as percentage of taxation (OECD, 2008a, p. 47)
—— Consumption taxes as percentage of total tax
—— Taxes on specific goods and services as percentage of total tax
—— Taxes on general consumption as percentage of total tax

use of value added taxes, which are discussed in section 3.1.2.

3.1.1 VAT and policy transfer

VAT has spread from just a handful of countries in the early 1960s and 1970s to over
140 countries currently raising major part of their revenues with help of this efficient tax.
And while each country having VAT in its tax policy mix has adapted it to its needs and
domestic conditions the process of introducing VAT as a policy innovation also differed
from country to country. Eccleston (2007) offers comprehensive study of how the idea of
VAT diffused and reached many countries, a process known as 'policy transfer'. For VAT
policy transfer conveys many aspects from political and economic forces to societal and
role of individuals and policy elites that were, or in some cases e.g. US have not (yet)
been, conducive to introduction of VAT. As a result there is no single reason that can be
solely held accountable for establishment of VAT in a given country (although some may
have contributed more than others), rather one should perceive it as many factors acting
together in particular economic circumstances of given period and opening a 'window of
opportunity' and letting VAT settle within the range of fiscal instruments.
In this way the Neumark Report of 1963 advocating all member countries of European
Economic Community (EEC) to adapt identical VATs from January 1$^{\text{st}}$ 1970 was met with
approval as many countries had already had a turnover tax in use and VAT presented as
superior form of it. This report, which was not binding to the member countries, was a
result of 'policy elites' acknowledging a new shift in public finance theory. In the context
of 1970s economic crises and Keynesian framework weakened this shift strived for tax
neutrality of tax systems and more market-tailored design so that 'market forces, rather
than the intricacies of the tax code and the political compromises they embodied, dictated

patterns of investment and consumption'(Eccleston, 2007, p. 52).

Process of diffusion of tax reforms was further complemented by role of international agencies, in particular OECD and IMF. Both have been supporting introduction of VAT and while they employ high-ranking officials from countries' core financial institutions ideas propagated by these agencies have chance to resonate with policymakers not directly linked with these agencies. It is nonetheless important to note that having OECD and IMF in support of VAT alone did (and does) not necessarily mean its immediate adoption. As Eccleston (2007) points out, for a politician to put VAT on agenda inevitably puts him under risk of heavy opposition and widespread disconcertion.[5] This is one of the reasons why even open debate about VAT, not to mention its implementation, is often linked or rather has to be linked to particular problems, political or economical, to be considered at all. Sections 4.1 and 4.2 discuss these questions for United States.

3.1.2 Opposition to VAT/GST

Consumption taxes raise many questions. Some of them go beyond methodical critique and turn into some form of attack against VAT. We shall take a closer look at some of them.

At the beginning of this chapter the distinction between income and VAT was emphasised. One way of labelling these two taxes is as direct and indirect tax respectively. There is (at least) one more way to put a tag on these two: progressive and regressive. Regressive meaning that poorer households devote bigger share of their budget for VAT than richer households do and thus leading to rising inequality. Income taxes are said to be more progressive than consumption taxes. To reduce this redistributive effect of consumption taxes governments set lower rates and exceptions on 'necessities'. It is however acknowledged that this strategy does not function well, as the rich can obtain more 'necessities' than the poor. It may also distort consumer choice and reduce efficiency of VAT (OECD, 2007a).[6] Many argue that the benefit system - government's spending is a better way of offsetting this inequality (OECD, 2007a), it is not without problems as International Monetary Fund has once described it:

> Fiscal policy - taxation and spending - is a government's most direct tool for redistributing income, in both the short and long run. However, the effect of redistributive tax policies, especially in the face of globalisation, has been small. Policymakers also need to consider how to distribute the burden of taxation so the system is seen as fair and just.

---

[5]In United States this is also known is 'Ullman syndrome' called after member of the Congress Al Ullman who proposed VAT twice (in 1979 and 1989) and who as a result was defeated from Ways and Means Committee which he was chairing, event though it was generally considered as one of the 'safest seats in Congress'(Eccleston, 2007, p. 151)

[6]VAT reaches highest point of efficiency when applied with one single rate, that is at least the theory. Studies have shown nonetheless that deliberate and careful choice of exception and lower rates can also be beneficial (OECD, 2008a, p. 51)

> The expenditure side of the budget offers better opportunities than the tax side
> for redistributing income. The link between redistribution and social spending
> - especially spending on health and education, through which governments
> can influence the formation and distribution of human capital - is particularly
> strong, and public investment in the human capital of the poor can be an
> efficient was to reduce income inequality over the long run.[7] (IMF, 1999)

Keen (2007) points out that most of the discussions categorising VAT as regressive actually miss the merit as they do not concentrate on distinctive features of VAT while they should be focusing on whether the tax is intrinsically regressive.

Opponents of VAT, or introduction of it, use further arguments to make consumption based tax seem less attractive. Apart from the regressive properties of the tax it is often claimed that VAT is vulnerable to fraud and evasion (Keen, 2007). Estimated losses circle around 10% of net VAT receipts for some member countries of the EU with noteworthy cost of so called 'carousel fraud' reaching 1.5% of VAT revenue in Germany. Yet tax evasion and fraud are not specific to VAT only but for any tax (Keen, 2007, p. 377). According to Jha (1998) RST is more prone to tax evasion than VAT. Distinctive for VAT is the carousel fraud which aims at exploiting the zero-rating of exports and refunds being paid to exporters. The principle used by fraudsters and organised crime is to generate VAT refund claims that do not match with the amount of VAT really paid. With thick net of in-between buffer and often innocent companies this fraud has proven in fact to be difficult to detect. Some possible solutions have been proposed to counteract this serious question as its consequences reach beyond just revenue losses to distorting trade statistics and impeding with macroeconomic management (Keen, 2007). One such solution would include a common rate of VAT on all business-to-business deals, including transactions between different member states.

According to Slemrod (2007) U.S. Internal Revenue Service has carried out studies on non-compliance to federal tax, which happen to be the most complete studies of that kind in the world. For the year 2001 the tax gap - amount of amount that should have been reported, is estimated at 13.7% (or 290 billion US$). This estimate is also put in comparison with noncompliance rates on VAT in other countries. As no unified study of that kind has beed carried out by OECD one has to rely on countries' internal sources of information i.e. HM Customs and Treasury evaluates this rate at 13.5% for the United Kingdom and in other countries ranging from 4 to 17.5 percent.

Two main points of opposition however, reported at President's George Bush Tax Panel in 2005, claim that VAT is a *money machine* and leads to growth of federal government, are discussed in section 3.2. Next section briefly discusses main differences between value added taxes and its counterparts, Retail Sales Tax and income taxes.

---

[7] i. e. Germany increased in 2007 rate of VAT partly to finance cut in social security contributions (OECD, 2007a). However Keen (2009) mentions that such 'earmarking' of additional revenue from higher rate of VAT to e.g. education may be a politically risky strategy.

3.1.3 VAT and RST / income taxes

Some of the main differences between consumption and income taxes have been already discussed, i.e. the progressivity of income taxes. This section is devoted to compendiously outline further points in which these taxes diverge from each other.

At first we take a look at Retail Sales Tax, a tax on consumption present in some of the states in the US. The idea behind these two taxes is the same, it is to impose a tax on final consumption. With VAT, as product moves along the supply chain from producer to wholesaler to retailer, all buying parties have to pay the tax as it is later refundable as opposed to RST which is a single stage tax. This means that in case the tax on final consumption was at risk - under VAT it would be only the amount on value added that would be lost while under RST it would mean the full amount of tax lost.

Retail Sales Tax requires traders and producers to be registered and makes them responsible for imposing the tax on sales to non-registered customers. Tax is not required on sales from registered to registered parties, unless goods are intended for private use (Jha, 1998). This small difference in how the tax operates can be viewed both as a favour or disadvantage for either of the two taxes. Traders under VAT are required to keep detailed information on sales and purchases as it later enables them to deduct tax paid on inputs. Under RST such bookkeeping is not obligatory. This argument is often brought up in debates between the two taxes to favour the latter, as it does not put that much of an administrative burden on traders (not to mention costs induced by maintaining complete account keeping). Jha (1998) does not see it that way and claims that administrative costs are likely to be equal as both systems generally require traders to be registered. It may also be seen as an additional echelon of control when both parties have to keep receipts. For traders under RST the view is not entirely burden-free however as they have to verify the final user and tax him accordingly e.g. purchasing a business trip ticket under VAT is a fairly straightforward procedure. It is up to the purchasing party to claim return on the ticket from tax authorities. Under RST, if all the requirements were to be fulfilled, a RST exemption certificate would have to be provided and the actual purpose of the trip would need to be verified (Jha, 1998, p. 310). This means that taking account of the service sector is significantly less cumbersome under VAT than RST.

The choice of which tax to rely on more from the governmental point of view is crucial for fiscal policy and as such has been debated for a long time. Following argument that implementation of value added tax in United States could lead to government raising too much money can be already found in Brennan and Buchanan (1977). How does the income tax then compare to VAT-like tax? Bankman and Weisbach (2006) conclude that an ideally constructed consumption tax is simply superior to an ideal income tax. Comparing ideal forms[8] of the two taxes knowing that none of them would be implemented in such a pure

---

[8]For consumption tax it means same rate is imposed on different forms of consumption no matter the time of occurrence. In case of income tax that means the same nominal rate is levied on the entire tax

form can be seen as giving income tax a head start. The two US based researchers call the current income tax *much worse than the ideal income tax* and in addition, because of its structural features, any reform of it would be difficult. Following this logic they conclude that if by making the best possible case for the income tax consumption tax still turns out to be superior, that the latter is even more desirable. As Bankman and Weisbach (2006) offer very comprehensive juxtaposition of the two taxes in order to keep the scope of this thesis we look into just few of the arguments.

To begin with Bankman and Weisbach (2006) list major arguments why would one favour income to consumption tax. In a structured manner they prove each of these arguments incorrect under various conditions. First of the points looks at distortions created by the tax burden. Here the difference lies therein that the income tax falls on the return from savings or capital income. Consumption tax on the other side can be seen as economically equivalent to tax on labour earnings and thus leading to a distorted view of how much one should work. The argument for income tax states therefore that by taxing returns from savings it is the actual tax on earning that can be kept lower. What happens to savings under an income tax leads Bankman and Weisbach (2006) to regard it as 'non-neutral' tax on consumption as it falls heavier on future consumption than on current one. The extent of distortion created by applying higher rates in consecutive time periods is illustrated by following example. Having earned \$100 in period t_0 an individual has the choice of spending it either immediately or in period t_1. With interest rate of 5 percent this individual could spend \$105 in t_1. Applying tax on returns of 40% decreases amount available in t_1 to \$103, which would be similar to sales tax of roughly 2% in t_1. The market value of money in t_0 under income tax equals \$103 $\times 1.05^{-1} = 98.09$. The further in time consumption decision is deferred the higher the effective tax rate. For period of three years the amount falls from \$116 to \$109 and present value to \$94.15, which equals sales tax of approximately 6 percent. For period of thirty years numbers show equivalent sales tax rate of 80 percent as the amount for consumption drops from \$432 to \$240 and value at t_0 of \$55. In this way tax on savings falls as heavily as direct tax on labour earnings with the difference that it further distorts consumption decision. By reducing the benefit of saving individuals planning future consumption are able to get less value in the future than today.

Second argument for an income tax is the one frequently mentioned in the debates. It states that income tax is generally progressive and better at redistribution while VAT is not flexible and cannot be adapted to individual circumstances (Schenk and Oldman, 2007). This means that VAT-like taxes take higher proportion of lower incomes whilst income tax rate rises with higher income. In a view of the quotation from International Monetary Fund cited above (p. 18) it is questionable whether progressivity and redistribution should be achieved within means of taxation as doing so by spending accordingly can yield better results.

With the next section 3.2 we slowly turn our focus towards the core subject of this thesis

---

base.

- taxing consumption in United States. The 'money machine' argument, which gives title to the proceeding section, stems from President's Advisory Panel in Federal Tax Reform, which was created by President George W. Bush in January 2005. This advisory panel had on its agenda recommending 'options that would make the tax code simpler, fairer, and more conducive to economic growth'. On that account next section tries to look into what 'money machine' could mean and if VAT is possibly one, based on approach found in Keen and Lockwood (2006).

3.2 'Money machine'

> Panel members recognized that lower income tax rates made possible by VAT revenues could create a tax system that is more efficient and could reduce the economic distortions and disincentives created by our income tax. However, the Panel could not reach a consensus on whether to recommend a VAT option. Some members of the Panel (...) expressed concern about the compliance and administrative burdens (...). Some members were also concerned that introducing a VAT would lead to higher total tax collections over time and facilitate the development of a larger federal government - in other words, that the VAT would be a money machine (President's Advisory Panel on Federal Tax Reform, 2005, p. 192).

Two main points of opposition emerging from this panel's quote are that VAT is particularly efficient at making money for the government and by the same token, causes the government to expand in size. One could think that from government's point of view, an efficient tool of raising revenue is somewhat beneficial and could be in turn used for 'wider social good' (Keen, 2009). Perhaps the latter point, growth of government, especially in the United States is the one which is feared the most and is seen as an unwelcome, looming consequence of VAT implementation. This poses an interesting question whether there was similar hesitation in the US of allowing free markets. Reason being that free markets can have social consequences i.e. ultimately driving the demand for government in the long term - but this is a matter for a different thesis.

So what is a 'money machine' and is VAT one? An approach to researching these two questions can be found in Keen and Lockwood (2006) who distinguish between two forms of 'money machine' hypotheses: a weak and a strong money machine. First one addresses the question whether countries with VAT in place raise more revenue than countries without it (by keeping all other thing equal).'The strong money machine hypotheses' targets the causality claim, that the adoption of VAT actually leads to a bigger government as in terms of total tax revenues. Ways of testing the two hypotheses differ somewhat with the weak one being less complicated to calculate. As both hypotheses are intertwined with each other they share nonetheless common tax design structure. For the weak money machine equation 3.1 represents welfare function which government ultimately seeks to maximise

with R standing for tax revenue creating welfare U and one single tax instrument. θ depicts how efficient is this tax instrument - low value of θ would mean an efficient tax.

$$W = U(R) - \left(\frac{1}{2}\right)\theta R^2 \tag{3.1}$$

With more efficient tax, according to the hypothesis, more revenue is collected than in countries without this efficient tax. This condition is represented in equation 3.2.

$$U'(R) - \theta R = 0 \tag{3.2}$$

In order to check whether the impact of VAT on revenues is significant, dummy variables and interaction terms for presence of VAT are added to tax effort equations, as the latter put tax ratios in relation to distinctive attributes of an economy i.e. its openness to international trade, share of agricultural sector in GDP or income per capita, which are represented in equation 3.3[9] by a column vector X_{it} of explanatory variables. By adding dummy variable for VAT as in equation 3.3 it can have not only a direct effect on revenue but also through other variables. R_{it} represents the tax revenue to GDP ratio of country i at time t, V_{it} is the just mentioned (binary) dummy variable for the presence of VAT ($V_{it} = 1$) and in case there is no VAT in country i at time t, V_{it} is equal to 0.

$$R_{it} = \alpha V_{it} + \beta'_v V_{it} X_{it} + \beta' X_{it} + \pi_i + \eta_t + u_{it} \tag{3.3}$$

Country and year specific effects are represented by π_i and η_t, with u_{it} denoting random disturbance. By running regressions of 3.3 with R_{it} as dependent variable it is thus possible to check for weak machine hypothesis: $\alpha + \beta'_V X_{it} > 0$ on panel of thirty OECD countries for the period stretching from 1965 to 2004.[10] According to this analysis VAT has indeed proved to be a 'weak money machine' in the sense that the effect on tax ratio is significantly positive. This effect in total revenue is however fairly moderate in size with revenue gains ($\triangle R = \alpha + \beta'_V \bar{X}$) of VAT implementation reaching in some countries between 0.5 and 2.1 percent of pre-VAT tax ratio.

For the 'strong money machine hypothesis' we can use adapted forms of equations 3.1 and 3.2 accordingly. Equation 3.4 represents an objective function where government has two tax instruments:

$$U = \lambda V(R_A + R_B) - \left(\frac{1}{2}\right)\theta_A (R_A)^2 - \left(\frac{1}{2}\right)\theta_B (R_B)^2 \tag{3.4}$$

A and B to choose from. R_A and R_B stand for level of revenues generated from those two tax instruments and in turn used for public expenditure. V symbolises private utility coming from public expenditure with α as a parameter depicting how strong this preference is. θ_i is the parameter capturing both efficiency and inefficiency of a given tax instrument.

---

[9]This equation is also explained in section 4.4
[10]Full results of regressions can be found in Table .5 in Appendix.

$R^2_{A,B}$ depict the idea, that with the revenue raised by A or B growing marginal costs of raising it also increases. Equation 3.5 thus states an important rule for R_i which implies two possible effects.

$$\lambda V'(R_A + R_B) = \theta_i R_i, \qquad i = A, B \tag{3.5}$$

One that increase in λ - the 'taste for government' leads to an increase in revenue raised with the two instruments R_A and R_B. Second implication shows what happens when one of the instruments, VAT (or A in equations), becomes more efficient. That means lower parameter θ_i to start with. Furthermore, revenue raised by A as well as by the two instruments together, $R_A + R_B$ increases. Private utility, V, benefits from having more efficient tax instrument. This benefit has two sources. One is increased public expenditure and second is reduced dependance on the second less efficient of the two tax instruments B, which in turn implies that R_B drops. What can be also observed is that in certain conditions public utility might respond more to reducing dependance on the less effective of the instruments instruments than to mounting up total revenue.

Keen and Lockwood (2006) use two approaches for testing strong money machine hypothesis. First of them employs Granger causality tests. With this approach the question stated was whether the time series of lagged values of revenue from VAT (RV_{it} in equation 3.7) could be used to forecast future values of total tax revenue (R in equation 3.6).

$$R_{it} = \alpha_0 + \alpha_1 R_{i,t-1} + \alpha_2 R_{i,t-2} + \beta_1 RV_{i,t-1} + \beta_2 RV_{i,t-2} + \pi_i + u_{it} \tag{3.6}$$

$$RV_{it} = \gamma_0 + \delta_1 RV_{i,t-1} + \delta_2 RV_{i,t-2} + \phi_1 R_{i,t-1} + \phi_2 R_{i,t-2} + \theta_i + \omega_{it} \tag{3.7}$$

Table .6 contains results of the Granger causality tests, which however leave the question concerning causality somewhat unsolved. The second approach takes a slightly different way and asks whether, once the weak money machine hypothesis has been verified, the increased revenue from VAT has been balanced by a fall in revenues from other taxes. This can be thus estimated with help of equation 3.8 in which, similarly to 3.7, RV_{it} stands for the revenue coming from value added tax expressed as a share of GDP,

$$R_{it} = \delta R_{i,t-1} + \gamma_V RV_{it} + \sigma V_{it} + \gamma' Z_{it} + \mu_i + \zeta_t + \xi_{it} \tag{3.8}$$

$\sigma, \gamma, \delta, \gamma_V$ denote estimative parameters and Z a vector of additional variables and three error terms: μ_i country specific, ζ_t time specific and ξ_{it} idiosyncratic error. The degree of offsetting of VAT revenues is thus captured by γ_V in the short run and in the long run defined as $\phi \equiv \frac{\gamma_V}{1-\delta}$. In similar fashion to parameter θ from 3.1 and 3.4 denoting efficiency of tax particular instruments, ϕ takes value of unity if there is no offsetting. Values of ϕ lower than unity would indicate marginal offsetting and values of $\phi > 1$ would signalise that revenue from both VAT and other taxes surge.

	1^2	2	3	4
$R-1$		0.812**	0.816**	0.836**
		(0.017)	(0.017)	(0.181)
RV	0.598**	0.172**	0.172**	0.137**
	(0.078)	(0.038)	(0.039)	(0.041)
V	-2.414**	-0.835**	-0.795**	
	(0.544)	(0.258)	(0.258)	
ϕ	0.598**	0.913**	0.935**	0.835**
	(0.0708)	(0.191)	(0.196)	(0.245)
Observations	864	825	825	630
R^2	0.944			
Serial correlation	$F(1, 29) = 1,159.77$			
	p=0.000			

[1] Both in percent of GDP; robust z-statistics in parentheses; ** indicates significance at 1 percent, * at 5 percent.
[2] Country and time dummies included (the former in all regressions) but reported

Table 3.2: Second approach to strong 'money machine' - relating total revenue to VAT revenue[1] (Keen and Lockwood, 2006, p. 919)

Table 3.2 is an abridged version of table .7 containing detailed results of regressions run on the same panel of data as 'weak money machine' hypothesis and included in Appendix for completeness. What an be observed throughout the test is that the offsetting parameter ϕ is taking values between 0 and 1, which indicates that VAT has indeed led to increased total revenue, but this increase has been to a large degree offset by decreasing revenues from other taxes which is in line with the strong money machine hypothesis. Looking at these results from OECD wide viewpoint, on average VAT makes up 6.9 percent of total tax revenue, and the corresponding increase in total revenue due to implementation of VAT is estimated to reach 2.4 percent in the long run. Furthermore, two thirds of revenue coming directly from VAT is expected to be offset by falling revenues from other tax instruments.

Concluding this chapter we can say that VAT has indeed proven to be a money machine both in the weak and the strong sense. Yet its efficiency in raising revenue tends to be rather used by governments not for stockpiling reserves but for exchanging less efficient tax instruments. In that sense Keen and Lockwood (2006) see money machine arguments as reasons speaking for the implementation of VAT and not as feared in President's Tax Panel, against it. Needless to say, political inclinations play a great role not only in the decision of adopting VAT but also making changes to it once it is in place. All this raises the importance of making sure that the vat like tax gets properly enacted from the beginning, as 'less than perfectly functioning VAT is an analytical mess'(Keen, 2007).

Section 4.4 will address a further study of Keen and Lockwood (2010) who researched the revenue gains and determinants of VAT adoption on panel of 143 countries over the period of 26 years. Using panel data from not only OECD countries makes it possible to look for regional differences arising from countries' individual circumstances of adoption and implementation of VAT. In the following chapter we look more closely at the relation of United States to the idea of federal value added tax. A subject for which, according to (Keen, 2007) there is 'not much research' done and mostly because the country in the centre of attention, United States, is allegedly not itself interested in VAT and thus affecting overall research interest away from VAT. Taking such 'scarcity' of literature on board we will try to inquire into why has United States not yet adapted the VAT, would it need such a tax instrument like VAT at all and if yes, is there comparable experience from other countries that could be used. For the latter we inquire into experience Canada has made with VAT, where federal General Sales Tax was introduced in 1991. Owing to somewhat similar governmental structure and issue of fiscal autonomy carved deeply into provincial mindset, Canada makes an interesting case to relate to for the possibility United States was to adapt value added taxes.

4 VAT/GST in the United States

This penultimate chapter looks at the quintessential point in this thesis, which is about the United States and VAT/GST-like consumption taxes. Even before we start considering relevant questions one can say in advance that the actual possibility of implementing a broad-base federal consumption tax in the US is incredibly low, at least for the near future that holds true. This does not mean however that one should not consider the possibility itself (and consequences of it) as there may be many different reasons for it being so low. To start with we take a short look at current economic situation in the US, which eventually leads to an important question: does the US actually need VAT-like tax at all? If yes, why is the US the 'final frontier for the VAT'(Keen, 2009)?[1] To put it other way we will try to answer why is it that such an efficient form of taxation has not yet been introduced in the country that dominates global economy while at the same time its tax system had little if no contribution to this dominance (Eccleston, 2007, p. 139).

If the US were to adapt VAT, which some observers according to Avi-Yonah (2009) see happening within next decade, it would be worthwhile to study the case from north of the border. Canada shares some commonalities with regards to economical and political structure and is a good example of consumption taxes working well on both federal and sub-national level. With these matters discussed we shift our focus to an attempt in modelling probability and revenue impact of VAT adoption as found in Keen and Lockwood (2010). We conclude this chapter with general suggestions which would help ensure that if VAT in fact was to become reality in the US, it would take account of US specific conditions and it would would work as intended.

4.1 Does US need VAT?

Looking at current state of the economy alone will not provide sufficient answer to the question whether United States need a VAT/GST-like tax as there are many long term fiscal challenges looming behind the corner. At the present economy is slowly coming out of recession, industrial production is gaining strength and slight rise in consumption expenditures is noticeable. The government has reacted to the housing downturn and financial crises with a mixture of monetary and fiscal measures by lowering federal funds rate and providing tax rebates (Figure 4.1a). With increased government spending i.e. for defence, fiscal stimulus packages and no commensurate rise in taxation, federal budget deficit is expected to border at ten percent mark (Figure 4.1b), which is far from 1%

---

[1] To be fair one has to point out that two states, Michigan and New Hampshire have 'imperfect state-level VATs', Single Business Tax (SBT), which is addition method VAT (Schenk and Oldman, 2007)

deficit projected by Congressional Budget Office back in 2007.[2] Out of every dollar spent by Treasury 46 cents is borrowed (Yrjanson, 2009). The CBO further projects a rise of federal debt held by the public from 36% in 2007 to 292% of GDP in 2050 with fiscal gap estimated at 5.2% of GDP for the next 50 years. There are different ways how to look at these figures i.e. those of two prominent economists Larry Kotlikoff and James Galbraith. The first one uses general accounting which subtracts projected revenues from commitments governments has made, and because richer and established countries generally have broader social programmes it makes them look worse when compared with countries without or less comprehensive benefits. As a possible solution Kotlikoff advises governments to cut spending and/or raise taxes. James Galbraith on the other side puts forward the idea that there is no danger of insolvency for United States as it always can impose taxes and print more money and thus considers generational accounting as misguiding. The author of this thesis considers these two approaches somewhat extreme yet to his understanding both have some rationale behind them and even share certain commonalities - making the use of the government's right to impose taxes, if only that was a non problematic issue in the US. The current administration faces however significant challenges already in 2011 when so called 'baby boomers'- post World War II generation enters retirement age of 65 and thus is eligible for social entitlement programme Medicare. Coincidentally longevity is increasing so by 2050 number of 65 year olds is expected to double, while fertility rates are low (OECD, 2007b). Under current projections from CBO costs of Medicare, Medicaid and Social Security are expected to surge from 8.4% of GDP to 25.7% in 2082 while federal revenue for corresponding time would only increase from 18.8% of GDP to 20.9% of GDP (Viard, 2009).

Avi-Yonah (2009) sees three, at least in theory, possible solutions from this situation. First would include significant cuts in the three major programmes. Second would aim at getting more revenue from the taxes already in place: income and payroll taxes. Third is introduction of VAT. From voters' point of view none of those three is optimal as Crook (2010) described it:

> American voters want more public services than they are willing to pay for. That is the country's fiscal problem in one sentence. When it comes to public finance, the "live now, pay later" mentality that caused the economic collapse still prevails.

Enacting benefit cuts, the first alternative, is favoured according to Viard (2009) by only 5 percent of taxpayers and could be seen as 'politically unacceptable'. Under current democratic administration medical costs, especially considering health care reform, are expected to rise. Second option is to raise existing taxes for top earning households to generate more revenue, which would go in line with the idea of progressive taxation - high income earners contributing more than their less well off counterparts. Top income

---

[2] As OECD (2007b, p. 60) points out, the rules and assumptions used by the CBO for making budgetary forecasts often produce 'too rosy picture for government finances.'

(a) Monetary and fiscal stance (b) General government net borrowing or net lending
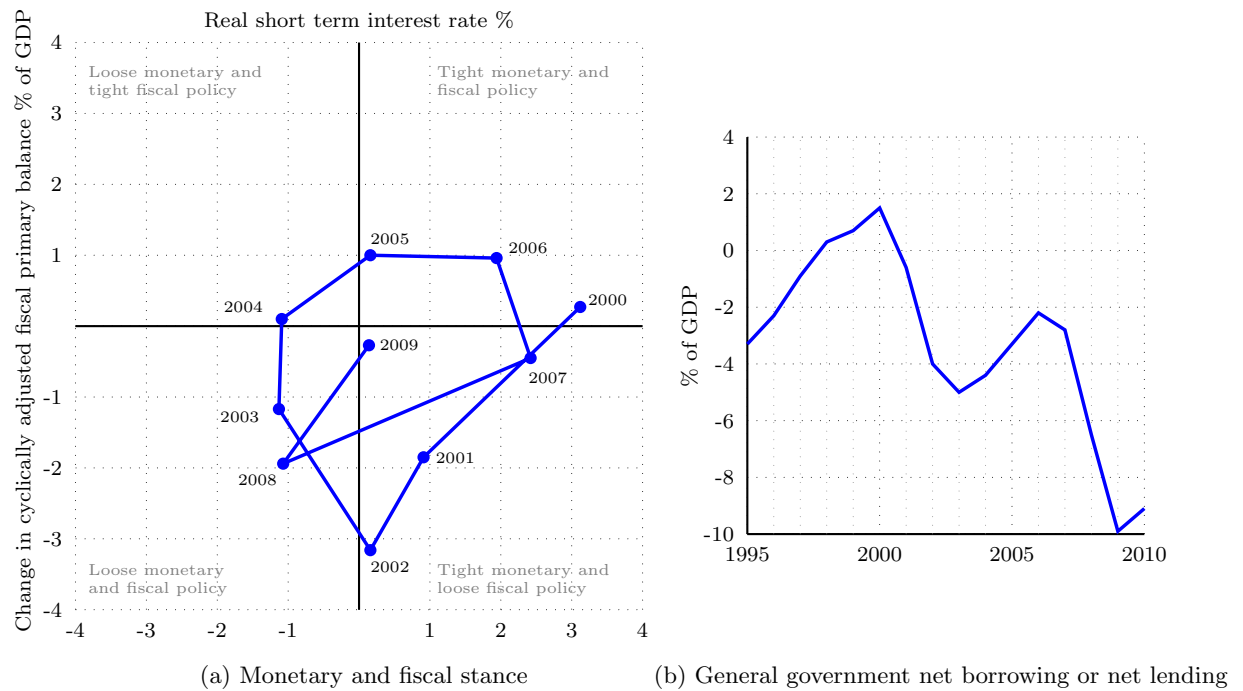
Figure 4.1: US economic situation 4.1a (OECD, 2008b, p. 30), 4.1b (OECD, 2010a, p. 195)

households in the US, five percent of all households, earn approximately 32 percent of national income. Because of the nature of income tax, an increase in taxation for this group could only mulct 16 percent of national income (and not the 32 percent). Raising revenue equal to 4 percent of national income from this very narrow base would require changing current marginal tax rates up by 25 percentage points (Viard, 2009), which eventually could lead to distortions and erosion of the tax base due to increased tax avoidance and evasion (Avi-Yonah, 2009). It is not only income tax base that is shrinking (40 percent of Americans do not pay income tax), but also this of RST as well. Retail sales taxes in many states for most part do not apply to interstate sales which is one of the reasons behind the boom in mail and online purchasing (Schenk and Oldman, 2007). The idea of adapting VAT in United States is, even with a view on upcoming fiscal challenges in the near future, more acknowledged among scholars and academics than with policymakers, which in itself is not all that surprising as consumption taxes are politically considered taboo (Montgomery, 2009). This is not stopping studies and estimates from advocating some form of national VAT e.g. from Leonard Burman[3] who calculates that with 25% VAT United States could finance health care reform and solve the federal budget issue.

The economic rationale speaking in favour of adopting VAT in the US is indeed convincing, yet it does not draw a full picture why there is a need for a tax reform. Current system is frustratingly complex, which was one of the reasons for George W. Bush calling the Tax Reform Panel in 2005 mentioned earlier. While generally seen as a country with low

---

[3]Leonard E. Burman, *A Blueprint for Tax Reform and Health Reform*, Virginia Tax Review 28(2):287-323

tax burden - 10 percentage points lower than OECD average, US subjects its tax payers to a conundrum of state and federal provisions. Marginal direct tax rates reaching 70 percent were lowered in 1986 reform, corporate profits however still face double taxation with marginal tax rate on capital income up to 65 percent (Eccleston, 2007, p. 141). Yrjanson (2009) reports on management of tax compliance costs for businesses that have to deal with sales taxes in 45 states, District of Columbia and local jurisdictions in Alaska, resulting in 13 thousand tax authorities. This is clearly a significant burden.[4]

4.2 'Final frontier'

A number of proposals regarding introduction of VAT in the US has been made, none of them was seriously considered however. In order to answer the question stated in the title of this chapter it is important to look back at these proposals together with their surrounding economic and political circumstances. First noteworthy consideration of VAT, according to Eccleston (2007), was made in 1969 in report submitted to Treasury by a Commission established by President Nixon. Main idea behind this move was to provide a relief to, at that moment difficult, fiscal position and furthermore, to lower business taxes. Shortly after in the early 1970s the fiscal situation improved slightly and VAT was no longer on the agenda, at least until next proposal. This happened to be the already mentioned case of Al Ullman, a Democrat who wanted US tax system to have solid footing and be less dependent on income tax. Opposition Al Ullman faced was from both sides of political spectrum with prevailing notion that government deficits should be addressed with cutting expenditures and not introduction of new taxes. Arguments used back then against VAT by the two main parties have staid the same, Republicans fear that national consumption tax would raise too much revenue (and lead to growth of government - 'money machine') and Democrats' opposition is mainly based on the argument of its regressive nature. Even if a politician is supporting VAT, raising this idea in public, because of great unpopularity among voters and among fellow politicians, is unlikely or could be considered a shortcut to ending one's political career - 'Nobody wants to get an Al Ullman syndrome' a Republican politician, who was personally convinced of benefits connected with VAT, is reported to have said about Ullman's loss as a Chairman of Ways and Means Committee. With inflation on the rise in the early 1980s anti government movements started focusing attention on flawed income tax base with many exemptions being exploited by the wealthy. In such environment presidential promise of Ronald Reagan not to raise any new taxes and rather give tax cuts was met with enthusiasm. In the end result of these actions was higher deficit which almost doubled by 1984 and which in turn was to be addressed by removing exemptions and loopholes. Leading up the 1986 Tax Reform Act VAT was given little consideration for few reasons. First, President Reagan did not want to break his campaign promise. Secondly, VAT was considered to carry high administrational and

---

[4] Yrjanson (2009, p. 14) also gives an example of the scope of monthly changes in tax legislature - May of 2009 brought alone 360 sales and use tax changes followed by 138 new tax authorities.

transitional costs, and therefore was not really a serious alternative. Yet the 1986 TRA is generally regarded as the 'most significant reform to tax base in the post-war period', as it sheds light on what combination of factors may result in successful amendment to what is considered touchy piece of legislation. Eccleston (2007) sees here fortunate mixture of 'political, economic and ideational' factors preceding the reform. Not only the difficult fiscal stance had been acknowledged, but also system's inability to raise enough revenue in a fair, progressive way. Together these factors opened a 'window of opportunity' which with help of policy entrepreneurs and supporting political leadership enabled change.

The temptation to promise voters benefits in presidential campaigns is huge and it may not only yield popularity with voters, but also may somewhat constrain government in the scope of useable alternatives. 'Read my lips - no new taxes' was George H. W. Bush's in the end broken promise as new taxes (on petrol and home heating oil) had to be introduced in face of rising deficit and obligations from various entitlement programmes. VAT, due to its alleged 'administrative complexity' was this time dismissed not by President Bush senior, but his budget director.

For the time of Bill Clinton's presidency at least two VAT proposals were made, and they go on account of Republican party as President included in his campaign a commitment not to introduce national sales tax. In the context of spending cuts and solid economic growth Republicans voiced their opposition by winning two Houses of Congress in 1994, but without President's support these two proposals to replace income with consumption tax could not go through. Following eight years of Clinton's presidency positive economic forecasts justified, what might now seem as fixed ingredient of (successful) presidential campaign, tax cuts promised by George W. Bush. With 11th of September much has however changed, defence spending surged and business confidence declined. Almost 2 percent of GDP surplus turned within four years to 4.4 percent of GDP deficit in 2004. Eccleston (2007) remarks that since 2000 US fiscal policy is trying to achieve contradicting goals as it on one side is cutting taxes (thus curbing the government's size) and on the other is launching further entitlement programmes. With all these developments in the background the aforementioned 2005 Tax Reform Panel was called which brought several propositions to introduce VAT. Notably the Federal Reserve Board Chairman Alan Greenspan was somewhat in favour of consumption taxes as he gave his testimony to the Panel:

> ...one of the first decisions that you will confront is the choice of tax base, possibilities include a comprehensive income tax, a consumption tax, or some combination of the two, as is done in many other countries. As you know, many economists believe that a consumption tax would be best from the perspective of promoting economic growth - particularly if one were designing a tax system from scratch - because a consumption tax is likely to encourage saving and capital formation. However, getting from the current tax system to a consumption tax raises a challenging set of transition issues (Greenspan,

2005).

This brief summary of past VAT proposals does not discuss their details in full length, yet it gives, in author's opinion, valuable insights in how diverse and politically difficult it would be to accomplish such a motion. For Eccleston (2007) several reasons emerge from the US post-war period policies as to why no national consumption tax has yet been implemented. Whilst there have been individual supporters of national consumption tax the idea has not managed to galvanise any consensus among policy elites, remarkably IRS and Treasury officials were against it. Without any prominent support the task of advocating VAT was delegated to numerous lobbying groups, which not surprisingly leads to at least as many different possible variants of VAT implementation and rather inevitably diminishes chances of reaching an agreement on the shape of VAT.

Support for VAT from high-ranking officials, if there was any, could help gain some momentum among politicians. As both parties in the US generally oppose national consumption tax they do it for different reasons. These reasons blend well in the historical context of tax politics: Republicans dote on the premise to keep federal government and its taxation capabilities small. VAT as particularly efficient tax is, in conservative circles, a 'money machine'- in direct opposition to this premise and should therefore be rejected for being too efficient (Brennan and Buchanan, 1977). Democrats, on the other side, fear the regressive impact of broad-base consumption tax even though revenues from it could allow for funding various welfare programmes. Bearing that in mind it is even more surprising that the policy of George W. Bush with its increasing welfare transfers and lower taxes on income resembles many properties of consumption tax.

Another obstacle that often stands in the way of national consumption tax in the US is the structure of legislative and executive branches. Eccleston (2007, p. 186) points out that the

> institutionally fragmented structure of decision making authority in the United States limits the capacity of executive government to implement radical changes to the tax code.

This notion of separating and at the same time limiting the federal government is also visible in how the States perceive national consumption tax. Because sales taxes are in domain of the individual States federal VAT poses a threat to their revenue base. Adding difficulty to the whole issue is the fact, that it would require a truly bipartisan approach to introduce VAT, which is sometimes even hard to achieve on less contentious matters.

Looking at the two questions, whether United States needs VAT and why there is no such a tax on national level there yet, may seem at first to leave the stance open-ended in a way that any answers still are debatable. One might say, US has made it so far without national VAT and can equally well continue without one - in a view of upcoming fiscal commitments this would definitely be a challenge. Without a slightest doubt, introducing a federal VAT would also be challenging. Yet it is the second alternative that author of

this thesis, as far as his reasoning is concerned, looks up to as plausible (however politically difficult) solution yielding more potential than remaining with current tax policies. This choice can be justified by the fact that experience from previous tax reforms shows that consensus for a change, in conducive environment, is possible. Furthermore, the case of Canada (discussed in the next section 4.3) where much feared combination of federal and provincial taxes has been in fact functioning well, adds to the view that appropriately designed national VAT is possible in the US.

4.3 Canada and GST

Canada introduced Goods and Service Tax, a form of federal VAT, on 1 January 1991 with rate of seven per cent. GST is one of four components or kinds of consumption tax present in the GST-HST-QST-RST system[5]. It is a system in which federal VAT cohabits with VATs, RSTs and no sales taxes at all on subnational level. Quèbec was first to replace RST for provincial VAT - called Quèbec Sales Tax, on somewhat special terms, at the time when GST was introduced. Three Atlantic provinces succeeded in 1997.[6] The difference is that while Quèbec has somewhat slightly different tax base and collects both QST and federal GST, for costs of which it receives compensation from the government. In the three, or from 1 July 2010, four 'harmonizing' provinces federal government collects both provincial and federal VAT under one name - Harmonized Sales Tax (HST). Department of Finance is working together with Statistics Canada on aggregate revenue pool, which in next step is allocated among provinces according to a 'straightforward, but not simple' procedure (Bird and Gendron, 2009). For each of the ten provinces tax base is calculated for five components.[7] On this estimated base provincial rates are applied and further calibrated to correspond with tax revenues. After deducting provincial rebates monthly entitlements are paid to HST provinces. Canada's initiation with VAT was neither quick nor quiet, but long and politically painful (Bird and Gendron, 2009), and now it is considered to be working well, well enough for the biggest province, Ontario, to adapt it from 1 July 2010. According to Bird et al. (2006) Canada's experience with subnational consumption taxes is the most valuable for United States for couple of reasons. Firstly, other countries with two-levels sales tax i.e. Argentina or Brazil have tax base limited to some specific sectors only. Moreover Canada introduced destination based VAT while retaining in some provinces Retail Sales Taxes, what can be seen as a flexible solution providing the provinces with autonomy. In the remainder of this section we look at the narrative of how federal GST was brought to life and furthermore, what kind of implications for the US could be extracted from Canadian case.

---

[5]Table .8 offers an overview on Canadian sales tax system in individual provinces.

[6]New Brunswick, Nova Scotia, Newfoundland and Labrador

[7]consumer expenditures, residential construction, financial institutions, public sector bodies and other taxable supplies not included in previous categories. Table .9 contains more detailed information.

As with past proposals putting forward VAT in the US it is important to look at the political and economic circumstances that altogether enabled federal VAT in Canada, as none of these alone is conducive enough for such a change.

Federal GST took place of single stage Manufacturers Sales Tax (MST) that raised revenues for federal government from 1924. MST, which was applied to most goods produced in Canada, was criticised in great extent for its 'narrow and arbitrarily' chosen tax base and thus compromising competitiveness of Canadian-produced goods against imports (Eccleston, 2007). Further criticism of MST pointed at high effective tax rates from the application of both MST and RST leading to higher costs of capital, which in turn distorts decision about what inputs should be obtained. Parallel to governmental attempts to broaden the tax base to distributive sector by redefining what counts as manufacturing, business were successful in avoiding MST by simply restructuring their enterprises. In order to maintain similar revenues, which for MST in years between 1960 and 1990 means around 10% to 20% of Federal revenue, and in view of shrinking tax base, government had to raise MST rate from 9 per cent in 1984 to 13.5 per cent in 1989 (Bird et al., 2006). This raises a question why such an inefficient and disruptive tax was kept in place for so long. Eccleston (2007) sees here a situation where there is no consensus on alternative kind of tax to replace MST and 10% to 20% Federal revenue is still a valuable addition to the budget that no one would like to simply give let go. Furthermore he states that '*the short term political transition costs (...) exceeded the political and economic benefits of reform*'. And MST might have remained for longer had it not been for the Progressive Conservative party elected in 1984 and economic situation it had to face in the late 1980s. Canadian deficit between 1970 and 1990 fluctuated between 5 and 10 percent of GDP and added substantially to the costs of servicing national debt. By the late 1980s one in every three dollars in federal taxes was used for that very purpose. The Progressive Conservative government of Brian Mulroney, gaining majority of seats in 1984 election, decided to reform the tax code and introduce federal VAT as a main tool of reducing the debt. Knowing that federal VAT is a politically difficult subject Mulroney's government waited until it was elected for the second time in 1988 to conduct changes. Even in face of great opposition the Prime Minister Mulroney was convinced that broad based federal consumption tax is the right alternative, introducing it in the House of Commons Finance Minister stated following:

> Politically, the expedient thing would have been not to proceed with the GST
> - the expedient thing for the Government but not for the country. (Eccleston,
> 2007, p. 103)

Going however into fine details of Canadian politics at that time is not at the heart of the scope of this thesis. We shall therefore look at Canadian experience with VAT from the perspective of United States. Following this path it is possible to draw some parallels with regards to what would be the main obstacles of VAT in the US and that Canada had to deal with and has done so rather successfully.

Higher administrative burden and compliance costs of VAT is often echoed argument brought against this from of tax. Bird et al. (2006) does not share this view and points out that, according to studies conducted before and after the introduction, GST compliance costs are lower than those of administering MST and RST. Furthermore, Canadian government, in order to ease the transition, offered credit to small business for necessary equipment and simplified requirements for small business i.e. less frequent filing for GST returns.

Similarly to United States, provinces in Canada can levy their own sales taxes that contribute greatly to their budget.[8] A federal consumption tax may be, for that reason, taken as a threat to provincial revenue and hence to (fiscal) autonomy of individual provinces. Yet Canadian experience shows quite remarkable results. Smart and Bird (2009) discover that in the provinces which have replaced RST for VAT, the annual level of investments in machinery and capital is up by 12 per cent compared to provinces with RST still in place. This is an acknowledged and disruptive effect of higher effective taxation rates under RST on business inputs. For provincial governments, what may also be of importance, is that marginal cost of raising a dollar in revenue through sales taxes on capital, is, as Smart and Bird (2009) report, cheaper with VAT than with RST ($1.13 and $2.30 respectively). It is mostly economic reasons why the Province of Ontario is joining HST, Bird and Gendron (2009) summarise this decision as '*more money, lower administrative outlay, better economic outcomes*' for Ontario.

Bird et al. (2006) remark that GST has not turned out to be a 'money machine'. GST was initiated with rate of 7 per cent and revenues from it followed the growth rate of nominal GDP and the growth rate of nominal consumption, averaging at around 5 per cent a year. In 2006 GST was even lowered to 6 percent. With appropriate monetary policy it is further possible to reduce 'price shock' and avoid inflationary 'price-wage spiral'.

Perhaps one of the most compelling arguments from Canadian experience with federal VAT can be derived from how Canada tried to minimise the regressive impact of this kind of tax. GST base employs both zero rating and exemptions for 'necessities' i.e. groceries, medical devices or prescription drugs. This seems to be a standard, or rather a political prerequisite for introducing VAT in most countries. A further step in progressive direction includes indexation of federal transfer payments to the Consumer Price Index (CPI). In this way any increase in sales taxes leads to an increase of federal and provincial transfer payments. For having the most progressive effect however Bird et al. (2006) regard refundable income tax credits introduced along with GST. Lower income households can request full credit, which gradually subsides with increasing income.

Canadian experience with VAT, even if not fully convincing, may be seem as encouraging for United States. Not only has it made difference for the federal government to have replaced ailing MST and aid the budget but also provinces get economic advantages

---

[8]Only the province of Alberta does not have any RST, owing to it being 'oil-rich'

from having acquired VAT. Not to mention the fact that this decision has not undermined their fiscal independence, provinces still have the say on final look of the tax code. If they decide for very 'individual' approach by having different rates and exemptions it ultimately creates higher administrative burden. If they however decide on more harmonised approach, meaning more cooperation between individual provinces and between provinces and the Federal government, then provinces are the sole beneficiaries and not the Federal government (Bird and Gendron, 2009). Canadian system, in essence, shows that it is possible to integrate 'dual-VATs' i.e. this of Quèbec, HSTs, RSTs or no RSTs at all. Required is however certain trust between provinces and federal government, conducive legal framework (taking into account local governments in the US) and to a certain degree committed political leader who would not be afraid of eventual political backlash, which is bound to arise. For Canada it was Prime Minister Brian Mulroney who led Progressive Conservative government to introduce GST and in late 1980s was convinced that:

> If we ducked the sales tax issue and avoided the tough decision on restructuring the economy, we could be passing the buck to our children, leaving them a legacy of hardship and debt they might never be able to overcome. (Eccleston, 2007)

This is also the opinion found in Walker (2009) regarding current situation in United States, stressing the immense fiscal burden left to future generations unless US starts to rely more on consumption taxes.

Before we delve into concrete recommendations as to in what shape and form should US adapt VAT we shall take a look at study done by Keen and Lockwood (2010) on panel of 143 countries regarding revenue gains and factors determining about adoption of VAT.

4.4 Determinants and revenue gains of VAT adoption

By looking for what set of factors can have a significant influence on the adoption of VAT and estimating corresponding revenue gains Keen and Lockwood (2010) extend their 'money machine' study, described in section 3.2, to over one hundred countries. The aim here is to find out reasons behind cross country differences in tax ratios, given that adoption of VAT had a positive effect on revenue and in further instance to look for possible explanations why countries have decided to implement VAT. Modelling of the revenue impact (but not of the decision to adopt a VAT) bears some similarities to the approach from the section 3.2, therefore we discuss here only 'new' or distinctive elements.

Using C to denote consumption and G for public expenditure Keen and Lockwood (2010) constitute a preference function $U(C, G)$ for an economy of a single and representative consumer. Public expenditure is paid for with taxes that raise revenue R. Consumer's welfare is represented by the function $U(Y - R, R)$, where gross income Y is a function $Y(R, V)$ with real number V denoting features of the tax. Marginal deadweight loss from taxation

$-Y_R > 0$ increases with higher value of R, thus a more efficient tax instrument is one that reduces the deadweight loss $Y_{RV} > 0$. From consumer's perspective a well-meaning government would be one seeking to maximise consumer's welfare U. Governments can do so by setting R accordingly. For any V, marginal rate of substitution for which consumer would be willing to substitute privately consumed good C for public good G would be equal to sum of 1 plus the marginal deadweight loss (equation 4.1). $\frac{U_G}{U_C} = 1$ would mean willingness to change one item of C for one item of public good. With increasing deadweight loss however consumer is willing to give up less of C for G.

$$\frac{U_G}{U_C} = 1 - Y_R \quad > 1, \tag{4.1}$$

With revenue ratio defined as $r \equiv \frac{R}{Y}$ we reformulate 4.1 to see what happens with amount of taxes raised when efficiency of the tax system increases:

$$
\begin{aligned}
H(r, V, Y) &\equiv U_C(Y_R - 1) + U_G \\
&\equiv U_C\left[(1-r)Y, rY\right](Y_R(rY, V) - 1) + U_G\left[(1-r)Y, rY\right] = 0
\end{aligned}
\tag{4.2}
$$

Linear approximation of 4.2 with r as a function $r(V, Y)$ gives $r \approx \beta_0 + \beta_1 V + \beta_2 Y + \beta_3 VY$, which it turn resembles equation 3.3. Equation 3.3 serves therefore similar purpose here as it did in 'money machine' section (3.2) that is estimating revenue ratio.

Yet before a country has a fully operational VAT in place it has to implement it first. This does not only mean setting up legal framework but also incurring country specific compliance, information and administrative costs, the latter denoted by K. These costs reduce the amount available for public expenditure G and thus lead to condition 4.3, where the maximised welfare U of a country after having adopted VAT ($V = 1$) and bearing costs of it K, should be greater than U without VAT ($V = 0$). According to one estimate for United States from 1980s VAT, if implemented, would have to bring \$100 billion in excess every year to make transitional expenses worth (Eccleston, 2007).

$$\max_G U[Y(1, G + K) - G - K, G] > \max_G U[Y(0, G) - G, G] \tag{4.3}$$

When expressed in terms of deadweight loss, VAT, in order to be implemented, would have to lessen the deadweight loss to a greater extent than it costs to adapt it (K):

$$Y(1, G + K) - Y(0, G) > K, \quad \forall G \tag{4.4}$$

Keen and Lockwood (2010) decide further to denote gain in welfare from VAT by: $\triangle W_{it} = \delta' Z_{it} - \epsilon_{it}$ with Z_{it} as a vector of explanatory variables and ϵ_{it}, like u_{it}, as a normally distributed error term. The condition on VAT, expressed by binary variable V_{it} is:

$$V_{it} = \begin{cases} 1, & \delta' Z_{it} \geqslant \epsilon_{it} \\ 0, & \delta' Z_{it} < \epsilon_{it} \end{cases} \tag{4.5}$$

Additional precaution is taken care of in case the two error terms, ϵ_{it} and u_{it}, were indeed correlated. Potential selection bias would distort estimated efficiency gains from VAT. For that reason M_{it}, an estimate of covariance between the two error terms is calculated (4.6) in form of a ratio of the probability density function over the cumulative distribution function. $\hat{\delta}$ required for that ratio is obtained from Maximum Likelihood Estimation of 4.5.

$$
M_{it} = \begin{cases} -\dfrac{\phi(\hat{\delta}' Z_{it})}{\Phi(\hat{\delta}' Z_{it})}, & V_{it} = 1 \\[4mm] \dfrac{\phi(\hat{\delta}' Z_{it})}{1 - \Phi(\hat{\delta}' Z_{it})}, & V_{it} = 0 \end{cases}
\tag{4.6}
$$

M_{it} can be then included in equation used for estimating revenue ratio (3.3) which takes following form (4.7):

$$
r_{it} = \alpha V_{it} + \beta' X_{it} + \beta'_V V_{it} X_{it} + \sigma_{u\epsilon} M_{it} + \mu_i + \lambda_t
\tag{4.7}
$$

Apart from variables already used in 'money machine' Keen and Lockwood (2010) employ further variables, representing deficit (DEF), share of services in as percentage of GDP ($SERV$) and also those representing regions.

Results in Table .10 included in Appendix show quite intricate stance on both reasons for adoption and possible revenue gains from VAT. Even though Keen and Lockwood (2010) do not try to conceal the fact that their calculations are possibly not very precise, they were able to track certain patterns emerging from that study. On the adoption of VAT it can be said, according to this study, it tended to spread regionally and income per capita is not a deciding factor. Moreover, open economies are likely to gain more from VAT than less open economies, but they are less keen on adopting it.[9] This may seem somewhat intriguing observation at first glance. Possible explanation is, while countries open to international trade would definitely gain from VAT, introducing it may require much broader and comprehensive reform of the tax system. Such a reform may also be seen as an intrinsic benefit of adopting VAT, yet in developing countries depending i.e. on tariffs transitional costs may be too high to justify the move to VAT. Relevant for the adoption also seems variable for the share of agricultural sector, the higher the share of it, the less likely a country is to implement VAT. As noted in section 3.1.1 on policy transfer, IMF and OECD are organisations rather favourable to VAT, an impression that Keen and Lockwood (2010) can confirm in their study - participation in non-crisis IMF programme emerges as a variable conducive to implementation of VAT.

Table 4.1 contains predictions for long term impact of VAT on total revenues, grouped by regions and whether countries had adopted VAT by year 2000 or not. To obtain these values Keen and Lockwood use results from one of the regressions on revenue equation and

---

[9]Variable $OPEN$ was measured as sum of GDP shares of imports and exports

	Asia-Pacific	Americas	EU+	North Africa and Middle East	Small islands	Sub-Saharan Africa
countries with a VAT	2.1	0.51	4.15	0.45	4.03	-0.83
countries without a VAT	4.73	6.24		0.03	2.87	0.91

Table 4.1: Average revenue impacts of VAT (Keen and Lockwood, 2010, p. 148)

calculate short run changes ($\triangle r$) in revenue.[10] For countries, or regions of countries that had not had VAT by 2000, corresponding value show mean predicted long term change in revenue.[11] For countries that had gotten VAT by 2000, values in table 4.1 show percentage gains for the year 2000 and which have accrued since introduction of VAT. Highest gain predicted could be expected in the Americas, around 6 per cent. Negative impact in Sub-Saharan African countries may be due to high offsetting of VAT revenues as countries start relying less on other forms of taxation.

What this study shows, among other things, is that VAT and its effects, should not be taken for granted as it depends on various and numerable circumstances. These are in turn specific to every country. The decision to adapt VAT should be therefore throughly deliberated, balancing benefits and some less desirable consequences. What can we take from this study and say in relation to the United States? Promising results, as an open economy United States would be bound to gain more from VAT. Even though one could not take the Canadian solution as it is and apply it over in the US (because of e.g. local governments, that in Canada fall fully in provinces' jurisdiction, but not in US), it still is encouraging to say the least. The idea behind the next and last section of this chapter is to put together specific recommendation on what should the main features of VAT in the United States, if it was to get implemented.

4.5 Recommendations on VAT for United States

The decision to implement federal consumption tax in the US would definitely not be an easy one to get through. The difficulty may be seen as twofold as it lies not only in achieving bipartisan consensus on the necessity of introducing VAT but also on how should it be structured. And here, partly because of how fragmented the decision making institutions are and that the design issues of VAT are left to myriad of think tanks handing in their own proposals, reaching a consensus may be particularly challenging. For Avi-Yonah (2009) many of the previously suggested VATs in the US missed the point as they were aimed at replacing income tax with consumption tax, whereas according to him,

---

[10] $\triangle r_{it} = \hat{\beta}_{YPC*V} lnYPC_{it} + \hat{\beta}_{OPEN*V} OPEN_{it} + \hat{\beta}_{AGR*V} AGR_{it} + \hat{\beta}_{FED*V} FED_{it}$

[11] Calculated with variables covering period 1990-2000 by $\triangle r_{i,2000}/(1 - \lambda)$, λ (0.586) being coefficient on lagged dependent variable (Table .10b)

federal VAT should be considered simply as additional tax next to taxes on income. Avi-Yonah further lists main points that US VAT should take into account, which we briefly discuss in the remainder of this section.

First design issue touches on how the tax liability is determined, using subtraction-method or credit-invoice method.[12] Sales-subtraction VATs are typically account, entity based while credit-invoice is transaction based relying on invoices. The relevant difference shows in the nature of exemptions, as the account based method tends to exempt individual sectors of economy, transaction based rather provides exemptions for specific goods or services and does not distort efficiency of the tax as much as subtraction method does.

Next debatable feature is whether VAT should be destination or origin based. The choice here is about how imports and exports are subject to taxation. For destination-based VATs (which most VATs in the world are) the jurisdictional reach of the tax is the country of consumption, for origin-based VATs it is the country where goods are produced or services are rendered (Schenk and Oldman, 2007). Having imports zero-rated adds to consumption efficiency, having exports zero-rated on the other hand contributes to production efficiency. For United States it would seem reasonable to adapt invoice credit destination based VAT. This variant has no compatibility issues with World Trade Organisation and offers further great experience and knowledge base from the overwhelming majority of countries that have adapted it, notably in the EU.

Treatment of financial and insurance sectors is next cornerstone in how should United States VAT be structured. Here European Union may not be considered as best-case example as financial services are mostly exempt from VAT, but newer VATs e.g. in New Zealand or Australia have succeeded in taxing this branch. Avi-Yonah (2009) looks up to Alan Schenk's proposals to tax most fee based financial and insurance intermediation services.[13] In similar vein housing sector should be treated. With regards to taxation of it there is considerable experience base that United States could take advantage of coming from Canada or New Zealand that impose tax on almost all provisions of real estate apart from reselling of used properties. The more comprehensive and wider the tax base, the better is VAT's efficiency and fewer distortions are created. This idea behind taxing financial and housing sectors should as well prevail in US version of VAT with regards to the public sector. Following this time not Canadian example, where most goods and services provided by government and public entities, charitable or non-profit organisations are exempt and suppliers rebates (Table .9), but this of New Zealand or Australia that grant almost no exemptions or zero-ratings for this sector.

Last, but no least remains the issue of numerous local governments, for which United States would have to find a working solution. Here a comprehensive study of McLure (2009) looks into several alternatives on how to coordinate hundreds of local entities in many states imposing their RSTs with a federal value added tax. McLure (2009) especially

---

[12]Credit invoice VAT is a credit-subtraction VAT.
[13]Taxation of Financial Services (Including Insurance) under a United States Value Added Tax, *Tax Law Review*, 63(2), 2010

holds combination of VAT on State level with VIVAT or CVAT, both special forms of VAT, on local level for 'feasible'. These two variants of VAT were designed to solve difficulties arising from trade between lower level jurisdictions, however with different countries in mind: CVAT for India and Brazil, VIVAT for the EU (Keen, 2000). The latter envisages a single, union/state-wide VAT rate, so that trades have to distinguish between registered and non-registered traders. Under CVAT, additional and dedicated administration body is required to deal with border taxes and refunds (McLure, 2009). Traders have to differentiate between sales within and between provinces while CVAT is imposed on the latter and sales within the province are kept zero rated.

In this chapter we have taken a look at the subject of value added taxes in the United States. VAT has been 'mentioned', but politically never seriously considered. To what degree this exclusion of VAT from agenda is driven by fear of political backlash one cannot exactly say, but looking back on 'Al Ullman's syndrome' and what happened to Progressive Conservative government of Brian Mulroney in Canada one can only speculate how harsh political consequences in the US would be. On the bright side however it seems that there is a vast knowledge base United States could use to design its own federal version of value added tax. It could be a remarkable opportunity to design VAT right from the scratch capitalising on experience of Canada, New Zealand, Australia and EU.
Recalling transfer policy theory, alignment of three kinds of factors: economical, ideational and political can together open a 'window of opportunity' for significant change of tax code. As far as author's perception is considered, first two categories are established facts and slowly, but continually they are pulling the last one and the most intractable of them all - political one, with them on board. Montgomery (2009) reports on 'recent surge of interest in VAT' and quotes a director of Tax Policy Center, Leonard Burman:

> Everybody who understands our long-term budget problems understands we are going to need a new source of revenue, and a VAT is an obvious candidate.

what may hint at exhaustive consideration of VAT in the near future.

5 Conclusion

Fiscal policy at its core operates with two instruments, taxation and governments spending. Two powerful instruments one has to add. What may be at first seen as a constraint - 'only' two instruments, does not mean that there is little or no variety within the subject of fiscal policy. As it has been discussed in chapter 2 there are many theories to what should be the role and efficiency of fiscal policy. From presented literature it is author's impression that neither disregarding fiscal policy in favour of monetary policy nor the inverse, complete reliance on monetary policy and casting fiscal policy aside, is advisable in a long term. Rather than pointing out each other's weaknesses it is sensible to acknowledge them and stride for thorough cooperation.

Taxes on consumption is recipient of the particular focus in chapter 3. For many countries VAT, a broad base consumption tax, has found its way into their policy mix and now would be rather considered as indispensable. The rate of adoption of VAT makes it stand out among other forms of taxation. Yet different motivation hides behind each adoption of it. For some countries it may have been simply to copy their neighbour's solution, for others it may be a requirement (EU) and other countries saw in VAT an efficient form of taxation. This efficiency alone does not suffice, as further, conducive circumstances are needed to make change possible. Prospected efficiency does come with a certain price tag attached to it, in form of arguments frequently held against VAT - regressive impact and 'money machine' among them. For the former, International Monetary Found - an organisation, that has its favouring influence on implementation of VAT confirmed - as shown in section 4.4, sees the expenses side of fiscal policy as better equipped to deal with preserving progressivity. 'Money machine' issue feared in Presidential Advisory Panel does seem be traceable statistically, yet what has been shown in section 3.2 in very moderate magnitude.

For United States VAT had been a taboo until recently, as current economic situation paired with dim fiscal outlook resonated an increase of VAT proposals. This does not mean that VAT had not been present in US politics throughout all that time. On several occasions VAT did indeed receive some notice, but as section 4.2 describes, it has never been granted with full consideration. Section 4.3 looked into how Canada has encountered VAT, called GST there. It showed number of things, but most importantly it showed that federal GST is possible in a flexible framework where provinces can either have VATs as in example of Quèbec, HSTs, RSTs or like the province of Alberta - no sales taxes at all. This means one significant argument against VAT less. Canada has also attempted to make GST less regressive. For Canada GST has worked as intended - helped to diminish debt and has not become a 'money machine'. Canadian experience and this from other coun-

tries that newly introduced VAT e.g. Australia is a valuable source of knowledge United States can utilise to make its version even better from the start. There are some hurdles to US VAT characteristic to the US - i.e. local governments - section 4.5 briefly discusses CVAT and VIVAT as plausible options. There is still the possibility that United States manages its upcoming fiscal challenges without having to put VAT/GST in place, for that Montgomery mentions Law Professor Michael Graetz, a VAT supporter to have said:

> People are beginning to recognise that the mathematics of the currents system are just unsustainable. You have to do something. And a VAT has got to be on the table if you want to do something big and serious.

which may indicate slightly that the idea of introducing VAT is slowly growing and entering public spotlight. Whether it is going to be a short-termed patch like solution giving a brief lapse of relief (and in words of Brian Mulroney 'passing the buck' to future governments and generations) or a comprehensive reform having long-term well being of the whole nation in mind but ruining political career of the leader trying to introduce it, time will tell.

Bibliography

Bernardin Akitoby and Thomas Stratmann. Fiscal policy and financial markets. *The Economic Journal*, 118:1971–1985, November 2008.

Christopher Allsopp and David Vines. The macroeconomic role of fiscal policy. *Oxford Review of Economic Policy*, 21(4):485–508, 2005. doi: 10.1093/oxrep/gri027.

Anonymous. The meaning of austerity. *The Economist*, June 24th 2010.

Philip Arestis and Malcolm Sawyer. Fiscal policy matters. *Public Finance/Finance Publiques*, 54(3-4), 2006.

Reuven S. Avi-Yonah. Designing a federal vat: Summary and recommendations. Paper presented at American Tax Policy Institute conference on Structuring a Federal VAT: Design and Coordination Issues, February 2009.

Joseph Bankman and David A. Weisbach. The superiority of an ideal consumption tax over an ideal income tax. *Stanford Law Review*, 58(5):1413–56, March 2006.

Richard M. Bird and Pierre Pascal Gendron. Sales tax in canada: the GST - HST - QST - RST system. *Revision of paper presented at American Tax Policy Institute Conference on Structuring a Federal VAT: Design and Coordination Issues, Washington, D.C.*, February 2009.

Richard M. Bird, Jack M. Mintz, and Thomas A. Wilson. Coordinating Federal and Provincial Sales Taxes: Lessons from Canadian experience. *National Tax Journal*, LIX (4):889–904, December 2006.

Alan S. Blinder. The case against the case against discretionary fiscal policy. *CPES Working Paper No. 100*, June 2004.

Geoffrey Brennan and James M. Buchanan. Towards a tax constitution for leviathan. *Journal of Public Economics*, 8:255–73, 1977.

Clive Crook. America can square its fiscal circle. *Financial Times*, page 11, February 2010.

Richard Eccleston. *Taxing Reforms: The Politics of the Consumption Tax in Japan, the United States, Canada and Australia.* Edward Elgar, 2007.

Guiseppe Fontana. *Current Thinking on Fiscal Policy*, chapter Fiscal Policy in Today's Endogenous Money World. palgrave macmillan, 2009.

Alan Greenspan. Testimony of chairman Alan Greenspan before the President's Advisory Panel on Federal Tax Reform. 2005. URL `http://www.federalreserve.gov/boarddocs/testimony/2005/20050303/default.htm`.

IMF. Should equity be a goal of economic policy?, January 1999. URL `http://www.imf.org/external/pubs/ft/issues/issues16/index.htm#policy`.

Raghbendra Jha. *Modern public economics*. Routledge, 1998.

Michael Keen. Vivat, cvat and all that: New forms of value-added tax for federal systems. *International Monetary Fund Working Paper*, April 2000.

Michael Keen. Vat attacks! *International Tax Public Finance*, 14:365–381, 365-381 2007.

Michael Keen. What Do (and Don't) We Know about the Value Added Tax? A Review of Richard M. Bird and Pierre-Pascal Gendron's The VAT in Developing and Transitional Countries. *Journal of Economic Literature*, 47(1):159–170, 2009.

Michael Keen and Ben Lockwood. Is the vat a money machine? *National Tax Journal*, LIX(4):905–928, December 2006.

Michael Keen and Ben Lockwood. The value added tax: Its causes and consequences. *Journal of Development Economics*, 2:138–151, 2010.

Tatiana Kirsanova, Campbell Leith, and Simon Wren-Lewis. Monetary and fiscal policy interaction: The current consensus assignment in the light of recent developments. *The Economic Journal*, 119:F482–F496, November 2009.

Paul Krugman. Is fiscal policy poised for a comeback? *Oxford Review of Economic Policy*, 21(4):515–523, 2005.

Charles E. McLure. How to coordinate state and local sales taxes with a federal value added tax. *Tax Law Review*, 2009.

Lori Montgomery. Once considered unthinkable, U.S. Sales Tax gets fresh look, May 27 2009.

Michael C. Munger. Economists and fiscal policy advice: A deficit or a deficiency? *Public Choice*, 118:235–249, 2004.

OECD. *OECD Economic Outlook*, chapter Saving Behaviour and the Effectiveness of Fiscal Policy. Number 76. Organisation for Economic Co-operation and Development, 2004.

OECD. Consumption taxes: the way of the future? Policy Brief, October 2007a.

OECD. *OECD Economic Surveys 2007: United States*. Organisation for Economic Co-operation and Development, 2007b.

OECD. VAT/GST and excise rates, trends and administration issues, 2008a.

OECD. *OECD Economic Surveys 2008: United States*. Organisation for Economic Co-operation and Development, 2008b.

OECD. *OECD Factbook 2010*. Organisation for Economic Co-operation and Development, 2010a.

OECD. *OECD Economic Outlook*, chapter Development in individual countries: United States. Organisation for Economic Co-operation and Development, 2010b.

President's Advisory Panel on Federal Tax Reform. Simple, fair, and pro-growth: Simple, fair, and pro-growth: Proposals to fix america's tax system, November 2005. URL `http://govinfo.library.unt.edu/taxreformpanel/final-report/index.html`.

Alan Schenk and Oliver Oldman. *Value Added Tax: a Comparative Approach*. Cambridge University Press, 2007.

Daniel N. Shaviro. *Taxes, Spending, and the U.S. Government's March toward Bankruptcy*. Cambridge University Press, 2007.

Joel Slemrod. Cheating ourselves: The economics of tax evasion. *The Journal of Economic Perspectives*, 21(1):25–48, 2007.

Michael Smart and Richard M. Bird. The impact in investment of replacing a retail sales tax with a value-added tax: Evidence from canadian experience. *National Tax Journal*, LXII(4):591–609, December 2009.

Robert M. Solow. Rethinking fiscal policy. *Oxford Review of Economic Policy*, 21(4): 509–514, 2005.

Alan D. Viard. Four long-term fiscal realitites. *Business Economics*, 44(3):143–149, July 2009.

David M. Walker. *Comeback America, Turning the Country Around and Restoring Fiscal Responsibility*. Random House, 2009.

John H. Wood. *A History of Macroeconomic Policy in the United States*. Routledge, 2009.

Simon Wren-Lewis. The limits to discretionary fiscal stabilization policy. *Oxford Review of Economic Policy*, 16(4):92–105, 2000.

Carla Yrjanson. Global recession relegates sales. *Coporate Finance Review*, 14(3):11, Nov/Dec 2009.

Appendix

Dependent Variable: Private saving (in per cent of GDP, National Accounts definition):[a]

	Estimated coefficients
Private saving	
Lagged first difference	0.11**
	(0.047)
Lagged level	−0.27**
	(0.034)
Public saving (net lending [b])	
First difference	−0.51***
	(0.048)
Lagged Level	−0.19***
	(0.034)
Controls	
Broad money (first difference)	−0.10***
	(0.271)
Change in terms of trade (first difference)	0.04***
	(0.057)
Old-age dependency ratio (lagged level)	−0.28***
	(0.057)
Per capita GDP growth (first difference)	0.32***
	(0.027)
Housing price index (first difference)	−0.02***
	(0.004)
Housing price index (lagged level)	−0.02***
	(-0.004)
Equity market index (lagged level)	−0.01***
	(0.001)
Memorandum items:	
Implied long-term offset	-0.70
No. of observations	275
No. of cross-sectional units	16
Second-order autocorrelation (p-value)	0.40

[a]   All models are estimated using the Arellano-Bond difference-GMM estimator and include a common intercept (not reported). Standard errors are reported in parentheses. Statistical significance at the 1, 5, and 10 per cent levels is denoted by respectively (***), (**), and (*). The null hypothesis of the Sargan tests for overidentifying restrictions is not rejected at classical levels of significance.

[b]   Net lending is cyclically adjusted.

Table .1: Response of private saving to fiscal stance (OECD, 2004, p. 150)

	1965	1970	1975	1980	1985	1990	1995	2000	2003	2004	2005
Australia								3,5	4,1	4,0	4,0
Austria			7,3	7,8	8,6	8,2	7,7	8,0	7,9	7,9	7,9
Belgium		3,7	6,4	7,0	7,0	6,9	6,7	7,3	6,8	7,0	7,2
Canada						2,5	3,0	3,3	3,4	3,3	3,3
Czech Republic							6,3	6,6	6,4	7,4	7,2
Denmark	2,7	7,2	6,6	9,6	9,4	8,5	9,4	9,5	9,6	9,7	10,0
Finland	5,6	6,0	5,7	6,2	7,3	8,5	7,9	8,3	8,7	8,6	8,7
France	6,9	8,6	8,2	8,4	8,3	7,8	7,3	7,3	7,0	7,2	7,3
Germany		5,5	5,2	6,2	5,9	5,9	6,5	6,8	6,4	6,2	6,2
Greece						7,1	7,0	7,9	8,3	8,3	5,9
Hungary							7,5	8,7	8,3	9,0	8,4
Iceland						8,8	9,3	10,6	9,8	10,5	11,2
Ireland			4,2	4,6	7,1	6,8	6,9	7,3	7,1	7,4	7,7
Italy			3,5	4,6	4,9	5,6	5,5	6,5	5,9	5,9	6,0
Japan						1,3	1,5	2,5	2,5	2,5	2,6
Korea				3,8	3,5	3,7	3,7	4,0	4,6	4,4	4,5
Luxembourg		2,5	4,0	3,7	4,4	4,2	4,5	5,2	5,4	5,9	6,1
Mexico				2,5	2,7	3,6	2,8	3,5	3,7	3,7	3,8
Netherlands			5,0	5,7	6,6	6,6	6,8	6,3	6,9	7,3	7,3	7,6
New Zealand						8,4	8,3	8,3	9,0	8,9	9,0
Norway		8,2	8,0	7,7	7,8	7,7	8,7	8,4	8,2	8,1	7,9
Poland							6,2	6,9	7,2	7,2	7,7
Portugal						5,4	7,1	8,0	8,0	8,0	8,3
Slovak Republic								7,4	7,5	7,8	7,9
Spain						5,1	5,1	6,0	5,9	6,0	6,2
Sweden		3,9	5,0	6,3	6,7	7,8	9,3	8,9	9,1	9,1	9,3
Switzerland							2,4	4,0	3,9	3,9	4,0
Turkey					3,4	3,7	5,5	7,8	8,2	7,1	7,1
United Kingdom			3,1	5,2	6,0	6,1	6,6	6,7	7,0	6,9	6,8
Unweighted average											
OECD - Europe	5,1	5,6	5,6	6,5	6,7	6,7	6,8	7,4	7,4	7,5	7,6
OECD - America				2,5	2,7	3,0	2,9	3,4	2,4	3,5	3,6
OECD - Pacific				3,8	3,5	4,5	4,5	4,6	5,0	5,0	5,0
OECD - Total	5,1	5,6	5,6	6,0	6,2	6,1	6,3	6,8	6,8	6,9	6,9

Table .2: Value added taxes as percentage of GDP (OECD, 2008a)

	1965	1970	1975	1980	1985	1990	1995	2000	2003	2004	2005
Australia								11,1	13,2	12,7	13,0
Austria			19,8	20,1	21,0	20,8	18,7	18,8	18,4	18,5	18,9
Belgium		11,1	16,3	17,0	15,8	16,5	15,3	16,2	15,4	15,6	15,9
Canada						6,9	8,4	9,3	10,2	10,0	10,0
Czech Republic							16,7	18,3	17,1	19,2	19,2
Denmark		18,8	17,3	22,3	20,2	18,3	19,3	19,3	20,0	19,9	19,9
Finland	18,5	19,0	15,6	17,3	18,3	19,3	17,4	17,4	19,4	19,6	19,8
France	20,1	25,5	23,1	20,9	19,7	18,4	17,1	16,5	16,3	16,5	16,6
Germany		17,1	14,6	16,6	15,8	16,6	17,4	18,4	17,9	17,9	18,0
Greece						24,6	22,0	21,2	21,8	21,8	21,5
Hungary							17,8	22,4	21,7	23,5	22,6
Iceland						28,4	29,9	27,6	25,9	27,2	27,0
Ireland			14,7	14,8	20,6	20,6	21,6	23,1	24,5	24,5	25,1
Italy			13,7	15,6	14,5	14,7	13,8	15,4	14,2	14,3	14,3
Japan						4,4	5,4	9,1	9,5	9,6	9,5
Korea				22,0	21,1	19,7	18,9	17,0	18,2	18,0	17,5
Luxembourg		10,6	12,1	10,5	11,1	11,8	12,2	13,3	14,3	15,8	15,8
Mexico				15,6	15,9	20,8	16,9	18,7	19,4	19,5	19,1
Netherlands			14,6	14,4	15,8	16,2	16,5	15,6	17,4	19,7	19,5	19,5
New Zealand						22,4	22,8	24,9	26,1	25,0	23,8
Norway		23,8	20,5	18,2	18,2	18,8	21,2	19,7	19,4	18,6	18,0
Poland							17,0	22,0	21,1	21,5	22,5
Portugal						19,6	22,5	23,4	23,1	23,8	23,8
Slovak Republic								22,5	22,7	24,7	25,1
Spain						15,7	15,8	17,5	17,2	17,3	17,5
Sweden		10,3	12,0	13,4	14,0	14,9	19,4	16,9	18,4	18,3	18,3
Switzerland							8,6	13,1	13,4	13,6	13,4
Turkey					22,3	18,3	24,3	24,2	24,9	22,8	21,8
United Kingdom			8,9	14,7	15,9	16,9	19,0	18,1	19,8	19,5	18,6
Unweighted averages											
OECD - Europe	19,3	16,8	16,9	16,7	17,4	18,4	18,3	19,2	19,4	19,7	19,7
OECD - America				15,6	15,9	13,9	12,7	14,0	14,4	14,8	14,6
OECD - Pacific				22,0	21,1	15,5	15,7	15,5	16,8	16,3	16,0
OECD - Total	19,3	16,8	15,6	17,0	17,5	17,6	17,6	18,4	18,7	18,9	18,8

Table .3: Value added taxes as percentage of total taxation (OECD, 2008a)

	implemented	standard rate												reduced rate	domestic zero rate[1]	specific rate applied within specific region
		1976	1980	1984	1988	1992	1994	1996	1998	2000	2003	2005	2007			
Australia	2000	-	-	-	-	-	-	-	-	10,00	10,00	10,00	10,00	-	yes	-
Austria	1973	18,00	18,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	20,00	10.00 / 12.00	no	16.00[a]
Belgium	1971	18,00	16,00	19,00	19,00	19,50	20,50	21,00	21,00	21,00	21,00	21,00	21,00	6.00 / 12.00	yes	-
Canada	1991	-	-	-	-	7,00	7,00	7,00	7,00	7,00	7,00	7,00	6,00	-	yes	14.00[b]
Czech Republic	1993	-	-	-	-	-	23,00	22,00	22,00	22,00	22,00	19,00	19,00	5,00	yes	-
Denmark	1967	15,00	22,00	22,00	22,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	-	yes	-
Finland	1994	-	-	-	-	-	22,00	22,00	22,00	22,00	22,00	22,00	22,00	8.00 / 17.00	yes	-
France	1968	20,00	17,60	18,60	18,60	18,60	18,60	20,60	20,60	20,60	19,60	19,60	19,60	2.10 / 5.50	no	0.90 / 2.10 / 8.00 / 13.00 / 19.60[c] 1.05 / 1.75 / 2.10 / 8.50[d]
Germany	1968	11,00	13,00	14,00	14,00	14,00	15,00	15,00	16,00	16,00	16,00	16,00	19,00	7,00	no	-
Greece	1987	-	-	-	16,00	18,00	18,00	18,00	18,00	18,00	18,00	18,00	19,00	4.50 / 9.00	no	3.00 / 6.00 / 13.00[e]
Hungary	1988	-	-	-	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	20,00	5,00	no	-
Iceland	1989	-	-	-	-	22,00	24,50	24,50	24,50	24,50	24,50	24,50	24,50	7,00	yes	-
Ireland	1972	20,00	25,00	23,00	25,00	21,00	21,00	21,00	21,00	21,00	21,00	21,00	21,00	4.80 / 13.50	yes	-
Italy	1973	12,00	15,00	18,00	19,00	19,00	19,00	19,00	20,00	20,00	20,00	20,00	20,00	4.00 / 10.00	yes	-
Japan	1989	-	-	-	-	3,00	3,00	3,00	5,00	5,00	5,00	5,00	5,00	-	no	-
Korea	1977	-	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	10,00	-	yes	-
Luxembourg	1970	10,00	10,00	12,00	12,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	15,00	3.00 / 6.00 / 12.00	no	-
Mexico	1980	-	10,00	15,00	15,00	10,00	10,00	15,00	15,00	15,00	15,00	15,00	15,00		yes	10.00[f]
Netherlands	1969	18,00	18,00	19,00	20,00	17,50	17,50	17,50	17,50	17,50	19,00	19,00	19,00	6,00	no	-
New Zealand	1986	-	-	-	10,00	12,50	12,50	12,50	12,50	12,50	12,50	12,50	12,50	-	yes	-
Norway	1970	20,00	20,00	20,00	20,00	22,00	22,00	23,00	23,00	23,00	24,00	25,00	25,00	8.00 / 14.00	yes	-
Poland	1993	-	-	-	-	-	22,00	22,00	22,00	22,00	22,00	22,00	22,00	7,00	yes	-
Portugal	1986	-	-	-	17,00	16,00	16,00	17,00	17,00	17,00	19,00	19,00	21,00	5.00 / 12.00	no	4.00 / 8.00 / 15.00[g]
Slovak Republic	1993	-	-	-	-	-	25,00	23,00	23,00	23,00	20,00	19,00	19,00		no	-
Spain	1986	-	-	-	12,00	13,00	16,00	16,00	16,00	16,00	16,00	16,00	16,00	4.00 / 7.00	no	2.00 / 5.00 / 9.00 / 13.00[h] 0.50 / 4.00[i]
Sweden	1969	17,65	20,63	23,46	23,46	25,00	25,00	25,00	25,00	25,00	25,00	25,00	25,00	6.00 / 12.00	yes	-
Switzerland	1995	-	-	-	-	-	6,50	6,50	6,50	7,50	7,60	7,60	7,60	2.40 / 3.60	yes	-
Turkey	1985	-	-	-	10,00	10,00	15,00	15,00	15,00	17,00	18,00	18,00	18,00	1.00 / 8.00	no	-
United Kingdom	1973	8,00	15,00	15,00	15,00	17,50	17,50	17,50	17,50	17,50	17,50	17,50	17,50	5,00	yes	-
Unweighted avg.		15,64	16,45	17,79	17,15	16,55	17,56	17,79	17,93	17,76	17,82	17,71	17,71			

[1] *Domestic zero rate* means tax is applied at a rate of zero to certain domestic sales. Unlike exemption, zero rate means that no VAT is chargeable by the supplier and the supplier is able fully recover input tax incurred in the process of making such supplies. For the purposes of this table, this category does not include zero rated exports.
[a] Applies in Jungholz and Mittelberg. [b] The provinces of Newfoundland and Labrador, New Brunswick, and Nova Scotia have harmonized their provincial sales taxes with the federal Goods and Services Tax and levy a rate of 14%. Other Canadian provinces, with the exception of Alberta, apply a provincial tax to certain goods and services. These provincial taxes apply in addition to GST. [c] Applies in Corsica. [d] Applies to overseas departments (DOM) excluding French Guyana. [e] Applies in the regions Lesbos, Chios, Samos, Dodecanese, Cyclades, Thassos, Northern Sporades, Samothrace and Skiros. [f] Applies in the border regions. From 1980 to 1991 the rate applied in the border regions was 6%. [g] Applies in Azores and Madeira. [h] Applies in the Canary Islands. [i] Applies in Ceuta and Melilla

Table .4: Value Added Tax / Goods and Services Tax rates in OECD member countries (OECD, 2008a)

Estimation method	1 OLS	2 OLS	3 OLS	4 GMM	5 OLS	6 OLS	7 OLS
R-1				0.867**	0.865**	0.838	0.853**
				(41.07)	(38.00)	(39.94)	(36.91)	(37.64)
Ln(YPC)	2.766**	-8.722**	-0.379	-0.998	-0.346	-0.815	-0.065
	(3.97)	(8.19)	(1.15)	(0.25)	(0.56)	(1.30)	(0.12)
OPEN	-0.338	-3.435**	-0.607	-0.624	-1.241	-2.396	-0.222
	(0.29)	(3.50)	(1.70)	(1.66)	(1.20)	(2.10)	(0.20)
AGR	-0.459**	-0.558**	-0.099**	-0.082*	-0.099*	-0.084	-0.032
	(7.55)	(3.93)	(10.33)	(2.01)	(2.37)	(2.01)	(0.72)
V	3.095**	1.138**	0.279	0.203	0.445	-0.015	4.625**
	(9.28)	(3.57)	(1.15)	(1.00)	(0.23)	(0.01)	(2.44)
*Ln(YPC)*V*					-0.145	-0.333	-1.368
					(0.27)	(0.63)	(2.66)**
*AGR*V*					-0.026	-0.025	-0.136*
					(0.54)	(0.52)	(2.25)
*FED**					0.500	0.568	0.33
					(1.58)	(1.70)	(0.99)
*OPEN*V*					0.52	1.84	-0.196
DEPOLD						17.62**	15.349**
						(2.94)	(2.66)
DEPYOUNG						-2.479	0.874
						(0.71)	(0.21)
IMFCR						0.002	-0.386
						(0.01)	(1.86)
Ln(POP)						0.25	-0.035
						(0.81)	(0.11)
Observations	865	865	856	826	856	856	745
R-squared	0.91	0.94	0.98	n.a.	0.98	0.98	0.98
Country dummies	yes	yes	yes	yes	yes	yes	yes
Year dummies	no	yes	no	no	no	no	no
Joint significance of VAT terms	n.a.	n.a.	n.a.	n.a.	0.0236	0.0708	0.0170
First-order serial correlation test	0.000	0.000	0.6151	n.a.	0.634	0.4801	0.9857

Notes:

YPC: income per capita, *AGR* share of agriculture, *OPEN* openess-sum of GDP share of imports and exports, *DEPOLD* population over 65, *DEPYOUNG* population betwen 14 and 65, *IMFCR* participation in IMF crisis programs

[1] Robust t-statistics in parentheses; and ** indicates significance at 1 percent,* at 5 percent.

[2] The diagnostic tests are: (i) an F-test for joint significance of VAT terms; (ii) a test for first serial correlation in panels, proposed by Jeffrey M. Wooldridge in *Econometric Analysis of Cross-Section and Panel Data* (2002). In each case, for ease of understanding, only the p-value of the test statistic is given. Also, n.a. indicates that the test is not applicable.

Table .5: Weak 'money machine'- do countries with a VAT raise more revenue?[1,2] (Keen and Lockwood, 2006, p. 914)

Dependent variable	1	2	3	4
	R	RV	R	RV
$R-1$	0.916	0.007	0.889	-0.004
	$(16.47)^{**}$	(0.29)	$(14.31)^{**}$	(0.14)
$R-2$	-0.016	0.025	-0.031	0.035
	(0.30)	(1.16)	(0.55)	(1.50)
$RV-1$	0.07	0.865	-0.01	0.935
	$(2.66)^{**}$	$(26.12)^{**}$	(0.15)	$(21.131)^{**}$
$Ln(YPC)$			-0.487	-0.323
			(1.36)	$(1.99)^{*}$
POP			0.007	0
			(0.89)	(0.15)
$OPEN$			-0.729	-0.204
			(1.91)	(0.81)
AGR			-0.104	-0.041^{**}
			$(3.92)^{**}$	$(2.59)^{**}$
Observations	971	969	848	848
R^2	0.98	0.95	0.98	0.95
F-test for Granger causality	n.a.	$F(2,936)=3.76$ Prob > F= 0.0236	$F(2,810)=2.36$ Prob > F= 0.0951	$F(2,809)=3.21$ Prob > F= 0.0409

Notes:
[1]   Robsust t-statistics in parentheses; country dummies included in all regressions;
and ** indicates significance at 1 percent, * at 5 percent

Table .6: Strong 'money machine' Granger-causality Tests[1] (Keen and Lockwood, 2006, p. 918)

	1^2	2	3	4
$R-1$		0.812**	0.816**	0.836**
		(0.017)	(0.017)	(0.181)
RV	0.598**	0.172**	0.172**	0.137**
	(0.078)	(0.038)	(0.039)	(0.041)
V	-2.414**	-0.835**	-0.795**	
	(0.544)	(0.258)	(0.258)	
$ln(YPC)$	-5.990**	-0.980*	-0.817*	-1.390**
	(1.041)	(0.384)	(0.0368)	(0.444)
$OPEN$	-2.726**	-0.980*	-0.894*	-0.687
	(0.951)	(0.401)	(0.408)	(0.431)
AGR	-0.432**	-0.095**	-0.103**	-0.163**
	(0.057)	(0.030)	(0.027)	(0.037)
$Ln(POP)$	1.225	0.346		
	(0.881)	(0.458)		
$DEPOLD$	71.48*	17.719**	19.785**	13.266*
	(12.619)	(5.617)	(4.694)	(5.795)
$DEPYOUNG$	-7.577	-3.042		
	(7.175)	(3.736)		
ϕ	0.598**	0.913**	0.935**	0.835**
	(0.0708)	(0.191)	(0.196)	(0.245)
Observations	864	825	825	630
R^2	0.944			
Serial correlation	$F(1,29) = 1,159.77$			
	p=0.000			
Sargan[3]		1.000	1.000	1.000
m_1 [3,4]		0.000	0.000	0.000
m_2 [3,4]		0.239	0.239	0.962

Notes:
[1] Both in percent of GDP; robust z-statistics in parentheses; ** indicates significance at 1 percent, * at 5 percent.   [2] Country and time dummies included (the former in all regressions) but reported,   [3] p-values, [4] The m_1 and m_2 statistics test for first- and second-order serial correlation in the equation estimated in first differences, with the former present and the latter absent if the equation is well-specified

Table .7: Strong 'money machine' - relating total revenue to VAT revenue[1] (Keen and Lockwood, 2006, p. 919)

Jurisdiction	Name of tax	Type of tax	Rate (%)	Yield[2] (%)	Administration	Comments
Canada	GST/HST	VAT	5/1.3	17.3	Federal, except in Quèbec, where it is provincial	GST rate (federal) is 5%, and applied throughout the country;, the federal government also administers a provincial sales tax of 8% in the three[1] HST provinces (sum is 13%)
Newfoundland and Labrador	HST	VAT	8	25.1	Federal	HST revenues collected in the three HST[1] provinces are distributed to provinces based on estimated taxable consumption
Nova Scotia	HST	VAT	8	44.2	Federal	Same as for Newfoundland
New Brunswick	HST	VAT	8	15.3	Federal	Same as for Newfoundland
Prince Edward Island	PST	RST	10	27.4	Provincial	Applied to retail sales price including GST
Quèbec	QST (TVQ)	VAT	7.5	16.2	Provincial	Applied to GST base plus GST
Ontario[1]	PST	RST	8	22.3	Provincial	Applied to retail sales price (excluding GST)
Manitoba	PST	RST	7	23.1	Provincial	Same as Ontario
Saskatchewan	PST	RST	5	18.4	Provincial	Same as Ontario
British Columbia	PST	RST	7	16.8	Provincial	Same as Ontario

[1] In March 2009 Ontario declared that from 1 July 2010 it adapts GST/HST system with 8 per cent provincial component

[2] as a share of total taxes

Rates shown are for 2008. The base of the Quèbec sales Tax (QST or TVQ, *Taxe de vente du Quèbec*) differs slightly from that of GST. Moreover, although the base of the provincial HSTs is the same as that of the GST, each province can alter the effective base by rebating its tax. Each Retail Sales Tax (RST) province has its own tax base, generally with considerable taxation of business inputs and with limited coverage of services, These taxes are not coordinated in any way with each other or with the federal GST.

Table .8: Sales Taxes in Canada, (Bird and Gendron, 2009, p. 3)

component	allocation of the HST base
consumer expenditures	Consumer expenditures (excluding sales taxes) subject to HST are calculated on the basis of purchasers price data from provincial input-output tables as updated by the more current provincial economic accounts data[a] These figures may be adjusted (as determined by Finance in consultation with the province) to exclude expenditures that do not form part of the tax base. These adjustments are usually very minor.
housing	The housing base is calculated separately because housing is treated differently in provincial economic accounts than under the GST: for example, new construction is included in the accounts at the time of construction rather than at the time of supply when the GST is levied. Moreover, the value of land is excluded from the national accounts but the GST is applied to land as well as construction.[b] The gross GST payable on new housing construction, alterations, improvements and transfer costs is then grossed up by the GST rate to estimate the housing base.
financial sector	The financial sector base is calculated as the unrecoverable GST – that is, GST for which no ITC may be claimed – payable by listed financial institutions (e.g. banks, insurance corporations, credit unions and trust companies) allocated to a province, again grossed up by the GST rate.[c] In effect, this section of the base measures the taxable expenditures of financial institutions related to exempt supplies.
public sector	Most goods and services provided by the public sector are exempt. Since exempt suppliers incur tax on their inputs, public sector suppliers generally receive a rebate under the rebate system in place under the GST/HST. Initially, the rebate rate for each class of institutions was calculated to ensure that their average tax burden would not increase as a result of the introduction of the GST. Subsequently, the rate for municipalities was increased from the initial 57.14% to 100% in 2004. Rebate rates now vary from 50% for charities and nonprofit organisations to 100% for municipalities. The public sector base is thus calculated on the basis of administrative data on the rebates paid to different categories and then grossed up by the product of the GST rate on purchases by each type of public sector body and the applicable rebate rate.[d]
other taxable supplies	Finally, the other (or business) component of the base is calculated in order to capture the unrecoverable GST related to the provision of exempt supplies. As in the case of the consumer base, this information is derived from the detailed provincial input-output tables, adjusting for exempt supplies, exports and other factors. Since input-output tables are only calculated every few years, this base is adjusted by a factor equivalent to the growth in nominal provincial GDP.

[a] For example, in 2002 gross consumer expenditures were C\$485 billion, which after deducting provincial and federal sales taxes yields net consumer expenditures of C\$455 billion. Finance Canada sends Statistics Canada a detailed blueprint of the tax status of the 727 commodities included in the input-output accounts, and the latter then calculates the tax base by province. For example, in the case of drugs and pharmaceutical products where some items are fully taxable and some are exempt, net expenditures were C\$10 billion and the taxable proportion (nationwide) was C\$3.5 billion. These taxable proportions are then applied to the 130 categories of personal expenditure available in the provincial economic accounts.

[b] For these reasons, Statistics Canada uses information on house sales from the Canadian Mortgage and Housing Corporation as well as other surveys on renovation expenditures and building permits in estimating the gross GST paid on housing.

[c] The allocation of such institutions is determined by Income Tax Regulations or, if not so determined, then by its location.

[d] For example, suppose that 80% of university revenues come from the sale of exempt services (e.g. tuition) and 20% from taxable services (e.g. parking). One could calculate the university tax base from such information; however, it is simpler to calculate that if a university receives C\$10 in GST rebates, and the GST rate is 5% and the rebate rate for universities is 67%, then the tax base is C\$298.51 ($^{C\$10}/_{67\%*5\%}$).

Table .9: Allocation of HST base according to five components, (Bird and Gendron, 2009, p. 33)

(a) Estimates of adoption equation[a,b]

	1	2	3	4	5	6	7
$ln(YPC)$	-0.11	0.001	0.032	0.001	0.001	0.002	-0.021
	(0.33)	(0.02)	(0.64)	(0.02)	(0.02)	(0.02)	(0.17)
$OPEN$	-0.171*	-0.092	-0.119	-0.092	-0.092	-0.241	-0.532
	(2.53)	(1.62)	(1.84)	(.95)	(1.60)	(1.62)	(1.66)
AGR	-0.331	-0.654**	-0.816**	-0.654**	-0.654**	-1.708**	-2.01**
	(1.42)	(2.59)	(3.03)	(3.20)	(2.83)	(2.59)	(2.81)
V_{-1}	0.963**	0.951**	0.953**	0.951**	0.951**	4.649**	4.574**
	(15.82)	(13.64)	(12.5)	(14.03)	(13.67)	(13.64)	(11.94)
$DEPOLD$		0.219	-1.804	0.219	0.219	0.573	-1.813
		(0.13)	(0.083)	(0.12)	(0.13)	(0.13)	(0.36)
$DEPYOUNG$		-0.208	-0.146	-0.208	-0.208	-0.543	-1.726
		(0.32)	(0.29)	(0.26)	(0.37)	(0.32)	(0.85)
FED		-0.109	-0.147	-0.109	-0.109	-0.28	-0.292
		(1.29)	(1.72)	(1.32)	(1.5)	(1.29)	(1.32)
$NEIGHBOR$		0.4**	0.542**	0.4**	0.4**	1.045**	1.056**
		(3.12)	(3.17)	(3.77)	(3.95)	(3.12)	(3.18)
$IMFCR$		0.065	0.086	0.065	0.065	0.173	0.146
		(0.97)	(1.26)	(0.77)	(0.98)	(0.97)	(0.83)
$IMFNCR$		0.236**	0.236**	0.236**	0.236**	0.697**	0.714**
		(3.86)	(3.75)	(3.18)	(4.08)	(3.86)	(3.94)
$ln(POP)$		0.012	0.025	0.012	0.012	0.031	
		(0.78)	(1.34)	(0.69)	(0.95)	(0.78)	
r_{-1}		-1.011**	-1.03**	-1.011**	-1.011**	-2.64**	-2.492**
		(3.30)	(3.15)	(2.5)	(3.24)	(3.30)	(2.95)
AFR			-0.036				
			(0.2)				
AP			-0.033				
			(0.17)				
AS			-0.126				
			(0.87)				
NMR			-0.280				
			(1.34)				
SI			0.162				
			(0.91)				
Observations	2913	2413	2413	2413	2413	2413	2413
Pseudo R^{2c}	0.856	0.866	0.869	0.866	0.866	n.a.	n.a.
Instrument validity^d							0.61 (0.4354)

[a] Robust z-statistics in parentheses, [b] * Significant at 5%; ** Significant at 1%,
[c] Pseudo R^2 is unity minus the ration of the maximized log likelihood to the log likelihood when only a constant term is included, [d] Distributed $\chi^2(1)$ undter the null, p-value in parentheses

(b) Estimates of revenue equation[a,b]

	1	2	3	4	5	6	7
$ln(YPC)$	-0.126**	-0.088**	-0.103**	-0.141**	-0.137**	-0.141**	-0.14**
	(4.05)	(4.44)	(4.93)	(4..70)	(4.50)	(4.70)	(4.57)
$OPEN$	0.175**	0.122**	0.123**	0.111**	0.11**	0.111**	0.111**
	(4.83)	(5.16)	(5.24)	(4.39)	(4.30)	(5.03)	(4.32)
AGR	-1.199**	-0.564**	-0.592**	-0.714**	-0.739**	-0.714**	-0.712**
	(6.04)	(4.25)	(4.33)	(4.97)	(5.03)	(4.47)	(4.82)
V	0.034*	0.017*	-0.054	0.092*	0.122*	-0.092*	-0.094*
	(2.70)	(2.07)	(1.32)	(1.97)	(2.35)	(2.24)	(2.03)
$ln(r1)$		0.626**	0.619**	0.586**	0.583**	0.586**	0.584**
		(13.65)	(13.24)	(11.41)	(11.22)	(9.78)	(10.73)
$ln(YPC)^*V$			0.025*	0.028*	0.043*	0.043*	0.03*
			(2.08)	(1.98)	(2.36)	(2.21)	(2.21)
$OPEN^*V$			0.024	0.032*	0.035*	0.032	0.031*
			(1.69)	(2.05)	(2.14)	(1.48)	(1.99)
AGR^*V			0.109	0.188	0.248	0.188	0.194
			(0.94)	(1.47)	(1.88)	(1.85)	(1.51)
FED^*V			0.011	0.02	0.014	0.02	0.017
			(0.76)	(1.11)	(0.7)	(1.01)	(0.88)
$DEPOLD$				1.101*	1.193*	1.101	0.864
				(2.07)	(2.11)	(1.82)	(1.61)
$DEPYOUNG$				-0.239	-0.26	-0.239	-0.280
				(0.99)	(1.07)	(1.13)	(1.09)
$IMFCR$				0.029**	0.031**	0.029**	0.027**
				(2.98)	(3.12)	(2.88)	(2.70)
$IMFNCR$				0.036*	0.036*	0.036	0.035*
				(2.26)	(2.27)	(1.84)	(2.15)
$ln(POP)$				0.002	-0.003	0.002	0.002
				(0.05)	(0.09)	(0.04)	(0.06)
M							0.0003
							(0.04)
Regional Dummies*V	No	No	No	No	Yes	No	No
Observations	2603	2334	2334	2117	2117	2117	2179
Sargan test^c		$\chi^2(1)$=0.444	$\chi^2(1)$=0.069	$\chi^2(1)$=0.084	$\chi^2(1)$=0.081	$\chi^2(1)$=0.084	$\chi^2(1)$=0.036
		(0.834)	(0.793)	(0.773)	(0.776)	(0.773)	(0.851)
Serial correlation test	F(1,129)=121.63	F(1,129)=0.71	F(1,129)=0.54	F(1,122)=0.18	F(1,122)=0.17	F(1,122)=0.18	F(1,122)=0
	(0.000)	(0.401)	(0.462)	(0.668)	(0.680)	(0.668)	(0.987)
Joint significance of V and interactions^c			F(5,2194)=3.56	F(5,2079)=2.36	F(5,2074)=2.32	F(5,25)=1.68	F(5,2040)=2.58
			(0.003)	(0.038)	(0.041)	(0.176)	(0.036)

[a] Robust z-statistics in parentheses,
[b] *Significant at 5%; ** significant at 1%,
[c] For each statistic, the p-values is in brackets

Table .10: Estimates of adoption and of revenue equation (Keen and Lockwood, 2010)

Eidesstattliche Erklärung

Ich versichere, dass ich meine Diplomarbeit ohne Hilfe Dritter und ohne Benutzung anderer als der angegebenen Quellen und Hilfsmittel angefertigt und die den benutzten Quellen wörtlich oder inhaltlich entnommenen Stellen als solche kenntlich gemacht habe. Diese Arbeit hat in gleicher oder ähnlicher Form noch keiner Prüfungsbehörde vorgelegen.

Wien, 23rd September 2010   Piotr Kwiatkowski Hauglin

Abstracts

Die vorliegende Arbeit befasst sich mit dem Thema der Fiskalpolitik in den USA. Als einziges Mitglied der Organisation für wirtschaftliche Zusammenarbeit und Entwicklung (OECD) haben die Vereinigten Staaten keine federale Umsatzsteuer (bzw. Mehrwertsteuer). Wie ist es dazu gekommen, dass es gerade in den USA die weltweit populärste Steuer nicht gibt? Wäre es nicht vorteilhaft fr die USA diese Steuer somit einzuführen? Was hat die Einführung von Mehrwertsteuer bis jetzt verhindert und welche Hürden würden ihr im Wege stehen - das sind die Kernfragen dieser Magisterarbeit. Um die Fragen zu beantworten wird zuerst Fiskalpolitik und Mehrwertsteuer erläutert - und das unter Berücksichtigung von relevanten Gegebenheiten politischer Natur.

This thesis discusses the idea of introducing Value Added Tax in United States. As the only OECD member, the US has not adopted VAT yet, a tax which since its introduction in late 1950s/ early 1960s can be found in nearly 160 countries. Does United States need a (federal) VAT, could it possibly benefit from its introduction? These questions gain in importance when paired with current economic stance of the US and future fiscal obligation on the horizon. In order to answer these and other questions fiscal policy and consumption taxes are discussed together with relevant political circumstances.

Piotr Kwiatkowski Hauglin

Education

2008–2010 **Master studies Business Administration**, *Universität Wien*.
Majors: Health Care Management; Supply Chain Management

2003–2008 **Bachelor's Degree (Bakk. rer. soc. oec.)**, *Universität Wien*.
Business Administration/Betriebswirtschaft

2002 **Kleines Deutsches Sprachdiplom**, *Goethe Insitut*, Prien am Chiemsee; München.
German Language course

1998–2002 **A-levels**, *IX Liceum Ogólnokształcące*, Gdynia, Poland.
Secondary school

Master thesis

title *Fiscal policy in United States and Value Added Tax*

Supervisor Kunst Robert, Prof.

Experience

2008–2009 **Study Assisstant**, *Universität Wien*, Chair of Supply Chain Management.
Department of Business Administration, Faculty of Business, Economics and Statistics

2003 **Apprentice**, *Aviko Farm Frites Poland S.A.*, Gdynia.
Export Department

Languages

native **Polish**

fluent **English** *Certificate of Proficiency in English, University of Cambridge ESOL Examinations*

fluent **German** *Zentrale Oberstufe Prüfung, Kleines Deutsches Sprachdiplom, Goethe Institut*

basic **Norwegian**

basic **Russian**

Computer skills

advanced standard Mac OSX, Windows, Linux

competent Office Suite, LaTeX

basic SPSS, XPress, AnyLogic

Interests

photography, jogging, ethics, history, British comedy and politics

Friedrich Kaiser Gasse 1/20 – 1160 Wien – Austria

+43 69911474781 • piotr.kwiatkowski.hauglin@gmail.com • d.o.b.: 15.06.1983