Oxera

Stamp duty: its impact and the benefits of its abolition

Prepared for ABI, City of London Corporation, IMA and London Stock Exchange

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Foreword

Stamp Duty is levied at a rate of 0.5% of the value of all purchases of shares in UK listed companies. In 2005/6 it raised nearly £3bn for the Treasury.

But this is not a painless tax, simply paid by the rich and by faceless City institutions. Instead, it has damaging effects right across the economy and on all income groups that far exceed the revenue it raises. Stamp Duty needs to be re-evaluated.

Prepared by the independent research company Oxera, and drawing on their expertise in economic modelling, this report quantifies the impact of Stamp Duty and illustrates the potential benefits of its abolition. For the first time, it sets out the facts about what this tax costs – to Britain's savers, companies and investors – and calculates the value that is lost each year that it continues.

Nobody, of course, enjoys paying taxes. So each year the Government receives countless submissions calling for their reduction. In our view, the case set out here is different from many, whatever their individual merits. This is because in so many areas, Stamp Duty undermines key public policy objectives.

First, Stamp Duty is damaging Britain's pensions and savings -

The Government has recently done much to encourage individuals and families to save more. It has introduced the Child Trust Fund, re-committed itself to ISAs by raising the annual limit for equity ISAs and also introduced legislation to create new Personal Accounts for retirement savings by 2012.

But savers in all of these will end up paying the costs of Stamp Duty. Their savings will be worth less as a result. This report shows how all of us pay for this tax through reductions in the value of our savings and our pensions.

Second, Stamp Duty damages companies' competitiveness -

Stamp Duty makes equity capital more expensive in the UK, by up to 12 per cent in some important sectors such as technology. By raising the costs of equity finance, Stamp Duty distorts capital markets and undermines London's long-term future as the world's leading global financial centre. There will be some who argue that London's current success means that we don't need to change Stamp Duty. We believe that this would be complacent and short-sighted. As the globalisation of financial services continues apace, competitive disadvantages will be increasingly transparent. The time to re-consider Stamp Duty is now, when London and the UK can build further success from a position of global strength.

And, third, Stamp Duty harms the economy -

Oxera's work shows that the British economy could be considerably better off without this tax. There is strong evidence to suggest that abolition could lead to an increase in rates of economic growth and, hence, in other government revenues.

From our different positions in this debate, all of our organisations have come together to set out the evidence about this tax and to assess the case for its abolition. We hope that there will now be a thorough debate on the report's conclusions and that the Government will feel able to respond positively. Abolition would be a clear signal that the Government supports savers, believes in London's role as a world leader in financial services and is continuing to work to boost the British economy.

ABI, City of London Corporation, IMA and London Stock Exchange

Executive summary

Oxera has been commissioned by the Association of British Insurers (ABI), City of London Corporation, Investment Management Association (IMA) and London Stock Exchange to conduct independent analysis of the impact of stamp duty on individuals, companies and the wider economy.

Stamp duty is levied on market participants that are not registered as financial intermediaries at a rate of 0.5% of the value of purchases of UK listed companies. This study considers the effects of gradual or outright abolition of stamp duty, as well as a one-off reduction in the stamp duty rate.

The main findings based on the research undertaken for this study are as follows.

Impact on individuals, households and pensioners

Stamp duty is a significant cost to individuals, reducing the value of their savings and other investments

A significant proportion of total annual stamp duty revenue (£2,930m) is derived from pension funds (£574m), savings and other investments managed by insurance firms (£627m) and individual stock holdings (£514m). Around £534m of total stamp duty payments is associated with authorised funds and investment trusts.

Stamp duty constitutes a considerable cost to pensioners throughout the lifetime of their savings, resulting in a strong effect on the size of total pension savings at retirement

For an average occupational scheme member who starts saving in 2006, stamp duty reduces the fund at retirement by around 1.52% (increasing to 2.38% for equity-based portfolios). This is equivalent to a reduction of the pension fund at retirement (in 2006 money) by around £6,441 (increasing to £11,538 for equity-based portfolios).

Stamp duty affects the attractiveness of flagship government schemes, including those designed for low- and mid-income individuals

Modelling based on assumptions that are consistent with the government's plans suggests that stamp duty has a potentially significant effect on benefits that accrue to individuals through these schemes.

– Stakeholder pensions—stamp duty is likely to reduce the size of the fund at retirement by around 2.44% (£7,540) for balanced portfolios, and 3.11% (£10,389) for equity-based portfolios.

– Proposed system of Personal Accounts—for passively managed strategies, stamp duty is likely to reduce the size of the fund at retirement by around 0.70% (£2,452) for balanced portfolios and 0.89% (£3,386) for equity-based portfolios. For portfolios with a representative mix of active and passive strategies, stamp duty is likely to reduce the size of the fund at retirement by around 2.75% (£8,970) for balanced portfolios and 3.49% (£12,415) for equity-based portfolios.

– Child Trust Funds—stamp duty is likely to reduce the size of the funds at the end of the savings cycle by around 1.07% (£156) for balanced portfolios and 1.34% (£202) for equity-based portfolios.

Impact on companies

The abolition of stamp duty would be likely to result in a significant increase in share prices and valuations, other things being equal, and a reduction in the cost of equity of UK listed companies
A share price appreciation and a short-run increase in valuations of around 7.2% could be expected. This is equivalent to a one-off £146 billion increase in the aggregate market capitalisation of UK listed companies. There could be a reduction in the nominal post-tax cost of equity of 7–8.5% (or 0.66–0.80 percentage points), and in the nominal post-tax cost of capital of 5.4–6.5% (or 0.50–0.60 percentage points).

The abolition of stamp duty could increase the capital expenditure of UK companies
For example, based on the investment levels in 2006, stamp duty abolition could lead to an increase in annual fixed business investment of FTSE 350 companies of £2.7 billion–£6.4 billion.

The effect of stamp duty abolition is likely to differ across companies and sectors
For instance, the abolition of stamp duty could reduce the cost of equity of an average UK technology company by 10–12%, while the cost of equity of an average UK retail company could be reduced by 9–11%.

Abolition of stamp duty would also particularly benefit sectors with high fixed investment intensity and high growth potential, including telecoms, technology, oil and gas, and retail companies.

Stamp duty affects the relative attractiveness of UK private and public equity
Stamp duty affects the cost of equity and valuations of UK public and private equity differently. While the cost of equity of an average UK publicly listed company is 7–8.5% higher than it would be if stamp duty were abolished, the effect of stamp duty on the cost of equity of private equity firms is negligible.

Impact on trading activity

The proportion of equity trading activity in the UK through the derivatives route has seen a significant increase over the last few years. Stamp duty is one of the factors affecting these changes.
Interviews with market participants have confirmed that some investors actively choose between equities, contracts for differences (CFDs) and futures, and that stamp duty is one of the factors negatively affecting the relative attractiveness of direct equity investments.

Changes in investors' trading behaviour over recent years have affected liquidity in the secondary markets. The impact of changes in trading activity on liquidity appears to vary depending on the size of company.
Large and medium-sized companies have seen the largest increase in the relative size of activity associated with derivatives trading, as well as the largest increase in liquidity. At the

same time, small companies have seen the smallest increase in the relative size of activity associated with derivatives trading, as well as the smallest increase in liquidity.

Changes in the way individuals trade are potentially affecting the quality of secondary equity markets due to corporate governance-related distortions
Stamp duty is effectively penalising investors that seek to participate in corporate governance of companies through direct ownership of equities.

Significant activity in CFDs and other derivatives might affect the quality of the market and activities of companies. For instance, decoupling of the ownership and the economic interest of derivatives owners potentially results in skewed incentives for investors.

Impact of stamp duty abolition on the economy

The abolition of stamp duty could have a significant impact on GDP and the government's tax-take
A permanent increase of GDP of between 0.24% and 0.78% could be expected.

The government's annual tax-take could increase by £1,268m–£4,071m, minus a £2,930m reduction in the annual tax-take due to the loss of stamp duty receipts. The additional analysis, based on the recent cost–benefit analysis carried out by the European Commission, suggests that the impact of stamp duty on the government's tax-take is likely to be towards the upper end of this range.

Depending on the degree to which stamp duty is discounted into share prices, its abolition might result in further additional tax receipts associated with higher income tax and VAT
However, these benefits are relatively small when compared with the benefits to the Exchequer associated with the increased GDP.

Stamp duty abolition would have a temporary effect on the government's capital gains tax receipts
Based on the historical capital gains tax receipts associated with UK listed equities, the abolition of stamp duty could result in a one-off increase in capital gains tax of around £281m.

Improvements in the liquidity (quality) of secondary markets could result in further benefits to the economy
Potential improvements in the liquidity of secondary markets associated with the abolition of stamp duty could lead to a further reduction in the cost of equity of UK companies, resulting in further benefits to the economy.

Partial and/or gradual abolition of stamp duty

A reduction in the stamp duty rate would be likely to have a significant effect on individuals, companies and the wider economy
The impact of changes in the stamp duty rate on trading activity in equity markets means the loss of direct stamp duty revenues associated with, for example, a 50% cut in the stamp duty rate from 0.5% to 0.25%, would be less than 50% of revenues. However, the benefits to individuals, companies and the economy would also be smaller than that implied by the actual reduction in the rate.

A firm commitment by the government to the gradual abolition of stamp duty in the foreseeable future would be likely to deliver significant up-front benefits

For instance, a commitment to abolish stamp duty gradually over a five-year period would, at the time of the announcement, deliver as much as 90% of the predicted reduction in the cost of capital that could arise in the case of immediate abolition of stamp duty.

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1 Introduction

Oxera has been commissioned by the Association of British Insurers (ABI), City of London Corporation, Investment Management Association (IMA) and London Stock Exchange to conduct independent analysis of the impact of stamp duty on investors, companies and the wider economy.

The study has been conducted against the background of significant changes in capital markets that have occurred particularly in the last few years. For example, there have been considerable innovations in trading strategies and derivative products that are extensively used to access equity markets, and changes in asset allocation which have affected the operation of capital markets and have influenced the way in which stamp duty affects different classes of investor. This report captures these developments to determine whether stamp duty might be affecting different investor types differently.

The key questions addressed in this study are outlined in the box below.

What is the cost of stamp duty to individuals, households and pensioners?	What is the distribution of stamp duty cost across different investor classes? What is the cost of stamp duty associated with different savings and investment schemes?
What is the impact of stamp duty on UK listed companies?	What is the potential impact of stamp duty on share prices and valuations of UK listed companies? What is the potential impact of stamp duty on the cost of capital and fixed business investment of UK listed companies? How is stamp duty affecting different sectors of the UK economy?
How might stamp duty be affecting trading activity in equity markets?	What are the changes in the way in which investors access UK equity markets, and to what extent is stamp duty affecting these changes? What is the effect of these changes in investor behaviour on the liquidity, transparency and overall quality of UK equity markets?
What is the potential impact of stamp duty abolition on the wider economy?	What is the potential impact of stamp duty abolition on the level of UK GDP? What is the likely impact of stamp duty abolition on the government's tax-take?

The study draws on a variety of methodologies to estimate the potential impact of changes in the stamp duty regime. In particular, it incorporates new research conducted by Oxera; knowledge acquired through interviewing a large number of fund managers, brokers and pension funds; and available academic and professional literature.

The report is structured as follows.

– Section 2 presents the background on stamp duty, and how it might affect individuals, companies and the wider economy.

– Section 3 sets out the results of the analysis of the stamp duty payments by different investor classes, and the cost of stamp duty to individual savers.

– Section 4 sets out the results of the analysis of the potential impact of stamp duty on companies, focusing on the way in which stamp duty might affect the cost of capital and fixed investment levels across companies.

– Section 5 sets out the results of the analysis of the potential impact of stamp duty on trading activity in secondary markets.

– Section 6 sets out the results of the analysis of the potential impact of stamp duty on aggregate fixed investment, economic growth and tax-take.

– Section 7 summarises the key conclusions of the analysis presented in the report.

2 Background

2.1 What is stamp duty?

Stamp duty is a tax that applies to dealing in UK registered equities. The general rate, which is paid by the buyer of the securities, is 0.5% of the purchase price. It is applied on a global basis, regardless of whether the agreement which gives rise to the charge is made in the UK or elsewhere, and whether or not the parties are resident in the UK. This means that all purchase agreements relating to equities within the scope of the charge are potentially subject to stamp duty.[1]

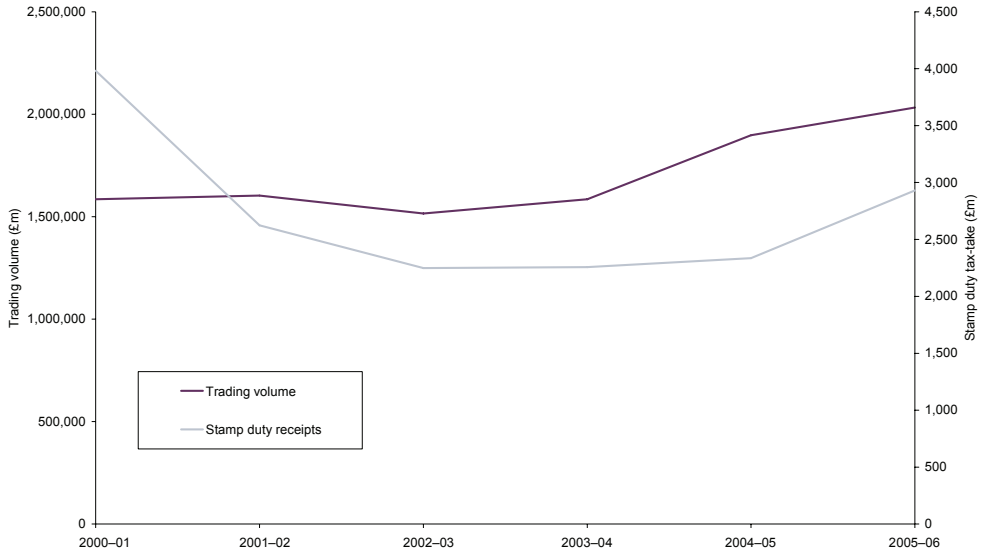
Not all market participants are subject to stamp duty. Since 1997, registered financial intermediaries trading at any UK-recognised exchange have been exempt from stamp duty. Therefore, activities such as market-making and hedging of sold derivatives contracts by financial intermediaries are exempt.

The rate of stamp duty has varied over the years. In August 1963 it was lowered from 2% to 1%, increasing to 2% in May 1974 and falling again to 1% in April 1984. In October 1986 the UK government reduced the rate to 0.5%.

2.2 Trading volumes and the stamp duty tax-take

The volume of trading of UK equities and the overall stamp duty tax-take have also varied over the years (see Figure 2.1).

Figure 2.1 Trading volume and stamp duty tax-take (£m)



Source: HMRC, Datastream and Oxera calculations.

[1] A higher rate (1.5%) applies when UK securities are converted into depository receipts, and when UK equities are transferred to, or issued into, a depository receipt facility. The charge of 1.5% is intended to represent a higher 'entry charge' to compensate for the fact that subsequent dealings in the depository receipts themselves (which represent the underlying share held by the depository receipt issuer) are not subject to the stamp duty charge. There is normally no stamp duty charge on the re-conversion of depository receipts into the underlying UK equities.

Figure 2.1 suggests that there has been a significant increase in total trading volume, while, at the same time, the stamp duty tax-take is currently below the levels observed in 2000/01, although it increased slightly in 2005/06. This can be explained by a reduction in the proportion of trading volume that is subject to stamp duty.

3 Impact on individuals, households and pensioners

The results of the assessment of the impact of stamp duty on individuals, households and pensioners are set out in this section. The main objective of the analysis is to consider the cost of stamp duty from the aggregate perspective, as well as the distribution of these costs across different investor classes. In particular, the study estimates how stamp duty affects different savings products depending on the chosen investment strategy (eg, asset allocation; active versus passive strategy).

3.1 The contribution of pension funds, insurance firms and individuals

This element of the analysis provides top-down estimates of stamp duty contributions across investor classes, based on UK equity ownership data and the velocity of trading estimates. For the purposes of this analysis, velocity of trading is defined as one-half of turnover, where turnover is the total value of shares traded (ie, bought and sold) by a given group of investors over the total value of shares in their portfolios.

The estimates of stamp duty payments by different investor classes are based on a number of assumptions.

– UK equity ownership data is based on Office of National Statistics (ONS) data. The UK Equity ownership dataset provides a breakdown of UK equity ownership into pension funds, insurance firms, individuals, and a number of other classes. Since this dataset is only available for the years up to 2004, the distribution of UK equity ownership in 2005 is estimated by applying the proportion of ownership of different investor classes in 2004 to the total size of UK equity in 2005, as reported by the ONS.[2]

  The pooled pension products recorded under insurance firms and individuals' investments contain direct ownership, and, in some instances, ownership of unit trusts. Therefore, the estimate of holdings by unit and investment trust is not representative of the total size of the industry. The total size of UK equity holdings of UK authorised funds and investment trusts in 2006 was around £225 billion,[3] compared with the total size of the UK equity market of around £1,699 billion. Velocity of trading data for pension funds is based on estimates presented in the UBS Pension Indicators.[4] Since no robust estimates of velocity are available for other investor groups, it is assumed that pension fund velocity is a reasonable proxy for velocity observed for insurance companies, individuals, and unit and investment trusts. Interviews with market participants have confirmed that using pension fund velocity is a reasonable approximation for insurance firm investments, although whether this is also a good proxy for investments of individuals and unit and investment trusts is somewhat more uncertain.

Table 3.1 below summarises the results. Stamp duty payments of pension funds, insurance firms, individuals, and unit and investment trusts are estimated based on their equity holdings and assumed velocity of trading. The stamp duty payments of 'other investors'[5] are

[2] The assessment of UK equity ownership of different investor classes over time suggests that the year-on-year changes in the relative size of UK equity ownership of different investor classes are relatively small. Therefore, the relative UK equity ownership across different investor classes in 2004 is likely to provide a good proxy for the relative UK equity ownership in 2005.

[3] Source: IMA (2006).

[4] Source: UBS (2006).

[5] 'Other investors' include private non-financial corporations, the public sector, and investors from the rest of the world.

estimated as a difference between total stamp duty payments, and estimates of stamp duty payments of pension funds, insurance firms, individuals and unit and investment trusts.

Table 3.1 Estimates of stamp duty contributions by different investor classes (2005)

	Estimates of UK equity holdings (£m)	Estimates of total assets (£m)	Estimates of stamp duty payments (£m)	Stamp duty/total assets (bp)
Pension funds	266,982	761,000	574	7.5
Insurance firms	291,775	983,500	627	6.4
Individuals	239,205	n/a	514	n/a
Unit and investment trusts	87,234[1]	n/a	188	n/a
Other	813,803	n/a	1,027	n/a
Total	**1,699,000**	**n/a**	**2,930**	**n/a**

Note: [1] Unit and investment trusts in the ONS data capture only part of the overall industry size (around £225 billion of UK equities are currently managed by the UK fund management industry—source: IMA 2006). The remaining funds managed by the industry are captured under other investor classes. Assuming that the velocity of trading of these funds is similar to that observed in the UK occupational pension schemes, the total stamp duty payments of these funds is around £483.8m.Therefore, total stamp duty payments associated with authorised funds and investment trusts (including stamp duty paid on trading in authorised funds) are around £533.8m.
Source: HMRC, ONS, UBS, Datastream and Oxera calculations.

The table shows the significant contribution from pension funds, insurance firms and individuals. It suggests stamp duty payments relative to total assets of pension funds and insurance firms of around 6–8bp. In other words, according to these estimates, stamp duty reduces annual yield on assets of pension funds by around 6–8bp. Notably, calculations based on the ONS equity ownership data over time suggest that, over the last five years, the share of stamp duty payments by pension funds appears to have remained relatively stable, while the share of insurance firms and individuals has declined slightly.

The table captures only stamp duty payments associated with direct equity trading of different investor classes. In addition, there are further stamp duty costs associated with the purchase of authorised funds by, for example, pension funds and individuals. The latest estimate of stamp duty paid on trading in authorised funds in 2006 was around £50m.[6]

3.2 Impact of stamp duty over the life cycle of pension savings—modelling

This element of the analysis estimates stamp duty costs over the life cycle of pension savings for different types of individual saver and different savings products.

Oxera has developed a savings model that allows stamp duty payments, stamp duty cost at retirement, etc, to be estimated depending on characteristics such as asset allocation, expected duration of savings, and velocity of trading. The model is designed to replicate the experience of different savers according to their individual circumstances, characteristics and savings behaviour.

The estimations of stamp duty costs are carried out for different savings scenarios. These calculations are done in a way that captures a wide range of individuals who save (or will save in the future) through products such as occupational pension schemes, stakeholder pensions, the proposed system of Personal Accounts,[7] and Child Trust Funds (CTFs). The stamp duty costs for each savings product are based on a range of assumptions based on

[6] Source: HMRC.

[7] This refers to the Personal Accounts that the government is considering introducing under its proposed National Pension Savings Scheme.

the characteristics currently observed in the market, expected characteristics going forward, and default investment choices given to the individuals.

Stamp duty costs are estimated at a first stage for a typical member of a UK defined-contribution group occupational pension scheme. The characteristics of such a member are based on the current actual characteristics of the average occupational pension scheme member in the UK. In other words, factors such as asset allocation, level of activity of the strategy, etc, are based on the average characteristics observed across all occupational pension schemes in the UK.

To assess the main drivers of stamp duty costs, the analysis considers the sensitivity of stamp duty payments to changes in the length of the savings period, the proportion of assets allocated into the UK, and the velocity of trading of UK equities in the portfolio. These calculations provide a reliable indication of the distribution of stamp duty costs across different members of occupational pension schemes, depending on their chosen investment strategy and length of savings.

Although the model is explicitly built to mimic the savings and costs of a defined-contribution group pension scheme, the findings also provide insight into stamp duty costs in the context of defined-benefit pension schemes. In particular, for the same investment strategy, stamp duty costs in the case of defined-contribution and defined-benefit schemes would be the same. However, unlike the defined-contribution schemes, where the costs are borne directly by the pensioners, in the case of defined-benefit schemes (particularly in the long run), these costs are likely to be shared between the sponsor company and individuals.

In addition to the modelling of costs associated with occupational pension schemes, the study considers stamp duty costs associated with a number of alternative savings products that are currently available or will be available to individuals in the future (namely stakeholder pensions, the proposed system of Personal Accounts, and CTFs). The differences in stamp duty costs associated with these products are primarily driven by the differences in the length of the savings period and the type of investment strategy (in particular, the proportion of assets allocated into the UK equity market and the velocity of trading of UK equity investments).

3.2.1 The stylised model

A stylised model of four fund types is presented below: for an occupational pension, a stakeholder pension, the proposed system of Personal Accounts, and a CTF. In the case of the three pension schemes, the model assumes that the representative investor starts a pension scheme at the age of 25 and retires at 65, and that there are only three assets available: bonds, UK equity, and overseas equity. In the case of the CTF, the investment runs for the maximum allowed time of 18 years.

Table 3.2 below details the key assumptions for each scenario modelled. The scenarios are generally based on the mixture of active and passive strategies consistent with current allocations observed in the market, although sensitivity analysis of stamp duty costs associated with occupational pension schemes provides an insight into the effect of choosing between active and passive strategies. The only exception is the proposed system of Personal Accounts, where both passive and a representative mix of passive and active strategies are modelled. Finally, to capture the diversity of the debt–equity mix in investors' portfolios, for each of the five scenarios the analysis considers a 'balanced' allocation and an 'equity-based' allocation. Appendix 1 provides a full description of the assumptions used in this modelling.

Table 3.2 Key modelling assumptions

Assumption	Occupational	Stakeholder	Personal accounts: passive strategy	Personal accounts: mixed strategy	CTF
Earnings at start of scheme	£19,499	£19,499	£19,499	£19,499	n/a
Average nominal growth of earnings	4.8%	4.8%	4.8%	4.8%	n/a
Contribution rate[1]	9.1%	7%	7%	7%	£456 pa[2]
Proportion of fund in UK equity					
Balanced	34%	55%	55%	55%	55%
Equity-based	52%	70%	70%	70%	70%
Velocity of UK equity trading	43%	43%	11%	43%	43%
Annual management charge	0.4%	1.0%	0.3%	0.6%	1.5%
Lifestyling begins	5 years before end	5 years before end	5 years before end	5 years before end	5 years before end

Notes: [1] This contribution rate does not reflect tax relief on the employee's contributions. This tax relief can increase the effective contribution rate by up to 1 percentage point. The model captures this effect by explicitly taking into account employee's tax relief in estimating annual contributions. Appendix 1 provides more detail on the tax relief across different pension schemes.
Source: Various academic and professional studies, and Oxera calculations (see Appendix 1 for full details).

3.2.2 Results

The modelling develops a number of metrics that capture the cost of stamp duty to savers.

- **Total stamp duty payments throughout the lifetime of the fund**—this value is the sum of all stamp duty payments made each year throughout the lifetime of the investment.
- **Size of fund when the investment ends, in today's money**—this value is the size of the individual fund at the end of the investment period: after 40 years, in the case of the pension funds, and after 18 years in the case of the CTF. The value is expressed in terms of the prices in the year in which the investment begins (ie, inflation-adjusted). In other words, this value is the total expected economic cost of stamp duty (in real terms) from the perspective of an individual starting a pension fund investment.
- **Stamp duty cost when the investment ends in today's money**—this value is the same as above ('stamp duty cost when the investment ends') but is in terms of the prices in the year in which the investment begins (ie, inflation-adjusted).
- **Stamp duty cost as a percentage of the fund when the investment ends**—this value is calculated as a ratio of the 'stamp duty cost when the investment ends' to the 'Size of the fund when the investment ends'.
- **Reduction in annual returns due to stamp duty**—this value is the difference in the average of the annual returns across the whole investment period in the case of no stamp duty, minus the average of the annual returns in a fund with stamp duty.

Occupational pension scheme

Table 3.3 below summarises the results of modelling the impact of stamp duty on members of defined-contribution group occupational pension schemes, for both the balanced debt—equity mix and the equity-based portfolio asset allocation. The table suggests that stamp

duty has a significant effect on the size of the pension fund at retirement. For the balanced allocation, stamp duty reduces the pension fund by 1.52% (or £6,441 in today's money). At the same time, for the equity-based allocation, stamp duty reduces the pension fund by 2.38% (or £11,538 in today's money).

Table 3.3 Occupational pension scheme stamp duty costs

	Balanced allocation	Equity-based allocation
Total stamp duty payments throughout the lifetime of the fund (£)	5,565	9,343
Size of the fund when the investment ends, in today's money (£)	423,157	484,797
Stamp duty cost when the investment ends, in today's money (£)	6,441	11,538
Stamp duty cost as a percentage of the fund at retirement	1.52%	2.38%
Reduction in annual returns due to stamp duty	7bp	11bp

Source: Oxera.

The differences in the stamp duty burden are driven primarily by the length of the savings period, the proportion of assets allocated into UK equities, and the velocity of trading of UK equities.[8] It is therefore informative to consider how differences in these key characteristics between different savers would affect the cost of stamp duty.

Tables 3.4 to 3.6 below show what happens to the stamp duty burden when these key assumptions are changed for the balanced asset allocation case. All other characteristics are consistent with the base case documented in Table 3.3. Table 3.4 shows that reducing the length of the investment has a significant effect on the size of stamp duty costs. For instance, a reduction in the savings period from 40 years to 30 years lowers the stamp duty cost from £6,441 to £2,159 (expressed in today's prices).

At the same time, Table 3.5 shows the impact of changes in the proportion of assets invested in UK equities. This analysis explains the difference in the stamp duty burden between the two asset allocation strategies in the occupational scenario presented in Table 3.3. The proportion of the UK equity component of the equity-based portfolio is approximately double that found in the balanced portfolio. Likewise, the stamp duty burden, measured in any of the terms, increases by a factor of 2 approximately between the two cases. This result can be seen in the other four scenarios presented below in Tables 3.7 to 3.10. In each case an increase in the proportion of UK equity in the portfolio results in a similar increase in the stamp duty burden.

Finally, Table 3.6 shows the impact of changes in the velocity of trading of UK equity investments. This is particularly relevant when considering differences in stamp duty costs between passive and active investment strategies. The table shows that changes in velocity of trading have a significant effect on stamp duty costs. For instance, with a reduction in the velocity of trading from 0.43 to 0.15 (the level commonly observed in passive investment strategies), stamp duty costs decrease from £6,441 to £2,378 (expressed in today's prices).

[8] Estimations show that, for a reasonable range of assumptions, the sensitivity of stamp duty costs to other assumptions (including the annual management charge (AMC), lifestyling period and average returns) is relatively small.

Table 3.4 Occupational pension scheme stamp duty costs (balanced allocation)

	Investment length (years)			
	20	**30**	***40***	**50**
Total stamp duty payments throughout the lifetime of fund (£)	492	1,864	5,565	14,739
Size of fund when investment ends, in today's money (£)	58,145	165,938	423,157	1,017,221
Stamp duty cost when investment ends, in today's money (£)	560	2,159	6,441	16,778
Stamp duty cost as % of fund when investment ends	0.65%	1.07%	1.52%	2.01%
Reduction in annual returns due to stamp duty	7bp	7bp	7bp	7bp

Source: Oxera.

Table 3.5 Occupational pension scheme stamp duty costs (balanced allocation)

	Proportion of assets allocated into UK equities (%)			
	20	***34***	**40**	**50**
Total stamp duty payments throughout the lifetime of fund (£)	3,038	5,565	6,817	8,980
Size of fund when investment ends, in today's money (£)	380,843	423,157	443,778	478,945
Stamp duty cost when investment ends, in today's money (£)	3,336	6,441	8,074	11,027
Stamp duty cost as % of fund when investment ends	0.88%	1.52%	1.82%	2.30%
Reduction in annual returns due to stamp duty	4bp	7bp	8bp	10bp

Source: Oxera.

Table 3.6 Occupational pension scheme stamp duty costs (balanced allocation)

	Velocity of trading of UK equity investments (%)			
	15	**30**	***43***	**70**
Total stamp duty payments throughout the lifetime of fund (£)	2,014	3,949	5,565	8,748
Size of fund when investment ends, in today's money (£)	446,134	433,648	423,157	402,302
Stamp duty cost when investment ends, in today's money (£)	2,378	4,614	6,441	9,929
Stamp duty cost as % of fund when investment ends	0.53%	1.06%	1.52%	2.47%
Reduction in annual returns due to stamp duty	2bp	5bp	7bp	11bp

Source: Oxera.

Stakeholder pensions

Table 3.7 summarises the results of modelling the impact of stamp duty on stakeholder pensions. The table suggests that stamp duty costs associated with stakeholder pensions are somewhat higher than those estimated for the occupational pension schemes. These differences can be explained by relatively higher UK equity allocation modelled for the typical balanced allocation in a stakeholder pension. Notably, stakeholder pensions and occupational pensions with similar UK equity allocation and level of activity of UK equity investments would also have similar stamp duty costs.[9]

[9] Minor differences would arise due to the differences in the AMC typically observed for the two products.

Table 3.7 Stakeholder pensions stamp duty costs

	Balanced allocation	Equity-based allocation
Total stamp duty payments throughout the lifetime of the fund (£)	6,774	8,975
Size of the fund when the investment ends, in today's money (£)	308,866	333,610
Stamp duty cost when the investment ends, in today's money (£)	7,540	10,389
Stamp duty cost as a percentage of the fund at retirement	2.44%	3.11%
Reduction in annual returns due to stamp duty	11bp	14bp

Source: Oxera.

Proposed system of Personal Accounts

Tables 3.8 and 3.9 summarise the results of modelling the impact of stamp duty on members of the proposed system of Personal Accounts. Table 3.8 documents the costs associated with passive investment strategies, while Table 3.9 documents the costs associated with mixed passive and active investment strategies. The mix of passive and active strategies (ie, the velocity of trading of strategies) is based on the representative mix observed in occupational pension schemes—ie, it is the same velocity of trading that is used throughout the calculations for other savings products modelled in this section.

There is a significant difference in the two strategy types in the proposed system of Personal Accounts scenario in terms of the burden of stamp duty. This can be explained by the difference of 28 percentage points in UK equity turnover.

Table 3.8 Proposed system of Personal Accounts stamp duty costs (passive strategies)

	Balanced allocation	Equity-based allocation
Total stamp duty payments throughout the lifetime of the fund (£)	1,929	2,573
Size of the fund when the investment ends, in today's money (£)	349,243	381,341
Stamp duty cost when the investment ends, in today's money (£)	2,452	3,386
Stamp duty cost as a percentage of the fund at retirement	0.70%	0.89%
Reduction in annual returns due to stamp duty	3bp	4bp

Source: Oxera.

Table 3.9 Proposed system of Personal Accounts stamp duty costs (mixed strategies)

	Balanced allocation	Equity-based allocation
Total stamp duty payments throughout the lifetime of the fund (£)	7,192	9,581
Size of the fund when the investment ends, in today's money (£)	325,882	355,363
Stamp duty cost when the investment ends, in today's money (£)	8,970	12,415
Stamp duty cost as a percentage of the fund at retirement	2.75%	3.49%
Reduction in annual returns due to stamp duty	11bp	14bp

Source: Oxera.

Child Trust Funds

Table 3.10 summarises the results of modelling the impact of stamp duty on members of CTFs. The table suggests that stamp duty costs associated with the two CTF scenarios modelled are between £156 and £202 (in today's prices). These costs can rise to £289 (in today's prices) for the otherwise similar lifestyled equity-based portfolios that are fully allocated into UK equities.

The burden of stamp duty in the CTF is lower than in most of the pension scenarios, except in the case of the proposed system of Personal Accounts passive strategy, where the relative values are less. As Table 3.4 above demonstrates, this is explained by the significantly shorter investment period, as well as the difference in fund contributions.

Table 3.10 Child Trust Fund stamp duty costs

	Balanced allocation	Equity-based allocation
Total stamp duty payments throughout the lifetime of the fund (£)	133	169
Size of the fund when the investment ends, in today's money (£)	12,731	13,138
Stamp duty cost when the investment ends, in today's money (£)	156	202
Stamp duty cost as a percentage of the fund at maturity	1.07%	1.34%
Reduction in annual returns due to stamp duty	11bp	14bp

Source: Oxera.

The stylised model developed in this study also provides a framework that can be used to estimate the impact of stamp duty across different families in the UK. For illustrative purposes, consider a typical family with two children. Assuming that such a family holds two typical balanced occupational pensions, two typical CTFs and two average equity ISAs,[10] over the lifetime of the parents, stamp duty would result in a cost of £10,720 (expressed in terms of money at the time the savings begin). At the same time, if they choose equity-based allocations in their investments, the total stamp duty cost would be as high as £18,867 (expressed in terms of money at the time the savings begin).

3.3 Top-down estimates of the stamp duty cost to occupational pension scheme members

The top-down estimates of stamp duty costs to occupational pension scheme members complement the estimates of stamp duty payments from the modelling. Table 3.11 below sets out the assumptions used in the top-down estimations of the stamp duty cost to private sector and public sector, self-administered, defined-benefit and defined-contribution occupational pension scheme members. Based on these assumptions, the annual stamp duty cost per active member is between £50.5 and £65.8.

[10] The assumptions used to model the two occupational pensions are the same as those in Table 3.2. There is an average of £3,000 to £9,000 in each ISA according to the age of the two adults over the course of the investment. The ISAs are assumed to have the same characteristics as the stakeholder pension described in Table 3.2. It is assumed that this family will open two CTFs when the two children are born. For the first five years of the children's lives, it is assumed that one adult will not work, and will then only work part-time for the next five years of their lives. After this period, the adult will resume full-time employment.

Table 3.11 Stamp duty payments

	Estimates
Total assets	£934 billion
Total stamp duty payments	£500m–£651m
Total number of active members	9.9m
Annual stamp duty cost per active member	**£50.5–£65.8**

Source: The Government Actuary, UBS, and Oxera calculations.

In addition to the overall estimates, it is informative to consider the stamp duty burden of specific segments of occupational pension schemes. Table 3.12 presents estimates of the stamp duty burden for a small sample of Local Government Pension Schemes. This is a segment of occupational pension schemes that face restrictions on the use of derivatives in their investment strategies.

The table suggests that the average stamp duty payments in these schemes are somewhat lower than the average across all the schemes. This can be explained by the relatively low velocity of trading observed in a given sample of Local Government Pension Schemes.

Table 3.12 Stamp duty payments of Local Government Pension Schemes

	Assets under management (£m)	UK equity investments (£m)	Estimated stamp duty (£m)	Stamp duty/ UK equity (%)	Stamp duty/ total assets (%)	Stamp duty per active member
Cornwall	884	367	0.45	0.123	0.051	28
Cumbria	1,093	319	0.45	0.140	0.041	28
Kensington & Chelsea	256	84	0.15	0.174	0.057	46
Southwark	479	211	0.25	0.117	0.052	42
Teesside	1,830	805	0.41	0.050	0.022	15
Tyne & Wear	3,406	554	1.18	0.213	0.035	24
Average	**1,325**	**390**	**0.48**	**0.136**	**0.043**	**31**

Source: Cornwall County Council (2006); Cumbria Local Government Pension Scheme (2006); Royal Borough of Kensington and Chelsea (2005); London Borough of Southwark Pension Fund (2003); Teesside Pension Fund (2006); and Tyne and Wear Pension Fund (2006).

4 Potential impact on listed companies

This section sets out the results of the assessment of the potential impact of stamp duty on companies, focusing on the way in which stamp duty might be affecting share prices, the cost of equity, the cost of capital, and fixed business investment, as well as differences in the likely impact across different sectors and companies.

4.1 How does stamp duty affect share prices and the cost of capital of companies?

Stamp duty and other transaction costs directly affect the gross return that investors require from their investments. If it is assumed that investors require minimum rates of return, net of all taxes and other transaction costs then there is a direct relationship between transaction costs and the required pre-tax return. In particular, in any given year, investors receive a final return that is a function of the pre-tax earnings of the company, corporation and personal taxes, and transaction costs. Assuming that the riskiness of the security stays the same, investors will want to receive identical final earnings, independent of tax rates and transaction costs. Transaction costs that investors bear in any particular year will therefore directly influence the post-corporation tax return that they require in this year, and hence the pre-tax return that firms need to earn.

A simple example serves to illustrate the mechanics of the impact of transaction costs on share prices. Consider a stock that is traded once every year, with transaction costs of 1p per transaction. Assume that the value of a share of the stock traded without any transaction costs is £1. Assume, furthermore, that the present value of the transaction costs (discounted, say, at an 8% cost of capital) is 13.5p.[11] In other words, the transaction costs reduce the stock price from £1 to £0.865. Now, if the trading cost declines by 0.25p to 0.75p per transaction, the present value of the costs of trading will decline to 10.1p, and the stock price will rise to £0.899, an increase of about 4%. Thus, as this example suggests, a seemingly small reduction in transaction costs can generate a substantial increase in stock prices.

4.2 Impact on share prices and valuations

Stamp duty abolition could result in a significant share price appreciation and increase in the valuations of UK listed companies, other things being equal. The likely level of the share price increase is estimated using the methodology developed by Jackson and O'Donnell (1985). This methodology relates the tax change, the level of velocity and the dividend yield to the changes in share prices by estimating the net present value of all future stamp duty payments:

$$PV = (t' - t) \times P_0 \times \sum_{i=1}^{\infty} \{1/(1+d/s)^i\}$$

[11] The present value (PV) of the trading costs is calculated as the discounted value of perpetual annual expected transaction costs: $PV = \sum_{i=0}^{\infty} \{E[TC_i]/(1+r)^i\}$, where i is the period, TC is transaction costs and r is the cost of capital.

where (t' – t) is the change in the tax rate, P_0 is the original price of the share, d is the annual discount rate minus the nominal growth rate of share prices, and s is the level of turnover for the share each year.

It is assumed that the velocity of trading is 0.43[12], and the dividend yield is 3%.[13] It is also assumed that institutional investors are 'marginal'—ie, in the context of trading costs, this implies that the equilibrium share prices and the cost of equity are determined by the trading costs faced by this investor class. If, however, valuations of stocks were driven by a wider cross-section of investors, the impact of stamp duty would still be potentially significant, although somewhat more ambiguous.

Based on the above assumptions, stamp duty abolition could result in a share price appreciation of around 7.2%. At the same time, a firm commitment by the government to abolish stamp duty over a five-year period would be expected to result in an immediate share price appreciation of around 6.4%.

The likely increase in share prices can also be expressed in terms of an increase in the aggregate market capitalisation of UK listed companies. In particular, the aggregate market capitalisation of UK listed companies[14] in March 2007 was £2,028 billion.[15] Therefore, other things being equal, the abolition of stamp duty could potentially increase the aggregate market capitalisation of UK listed companies by around £146 billion.

The abolition of stamp duty could have an effect on the valuation multiples of companies, in the short run increasing the price-to-earnings ratio by around 7.2%. Therefore, in the short run, the price-to-earnings ratio of FTSE All-share companies would increase from 14.36 (January 2007)[16] to 15.39. However, the effect on valuations in the long run is less clear. For instance, the valuations might be further increased due to the higher growth potential associated with stronger competitiveness of the UK listed companies, although the magnitude of this effect is uncertain.

4.3 Impact on the cost of equity and cost of capital

Alternatively, the impact of stamp duty can be considered in terms of the impact that stamp duty abolition could have on the cost of equity capital of UK listed companies. This impact is estimated using the following assumptions.

– Domowitz and Steil (2001) estimate that the elasticity of the post-tax cost of equity to transaction costs is 0.14–0.17. In other words, a 10% reduction in transaction costs would be likely to result in a 1.4–1.7% reduction in the nominal post-tax cost of equity.

– Based on Elkins & McSherry data, in 2005 stamp duty constituted around 50% of the total trading costs faced by institutional investors in the UK.

Based on the above assumptions, the abolition of stamp duty would be likely to result in a reduction in the nominal post-tax cost of equity of UK listed companies of 7–8.5%. Assuming that the current average nominal cost of equity of UK listed companies is 9.4%,[17] this is equivalent to a reduction in the post-tax cost of equity by 0.66–0.80 percentage points.

[12] Source: UBS (2006).

[13] Source: Datastream and Oxera calculations.

[14] Constituents of the London Stock Exchange Main Market and AIM market UK incorporated companies.

[15] Source: London Stock Exchange.

[16] Source: Datastream and Oxera calculations.

[17] Based on the average historical equity returns documented in Barclays (2006).

The current average gearing level of UK listed companies is around 23.5%.[18] Based on this, stamp duty abolition would be likely to result in a reduction in the nominal post-tax cost of capital of 5.4–6.5%. Assuming that the current nominal cost of capital of UK listed companies is 9.2%,[19] this is equivalent to a reduction in the cost of capital by 0.50–0.60 percentage points.

A reduction in the stamp duty rate would be likely to have a significant effect on the cost of capital of UK listed companies. The nature of the effect in the case of reduction would be similar to that observed in the case of full abolition, although, in the case of the stamp duty reduction, some of the benefits would be offset due to the increase in trading activity that is subject to stamp duty. Therefore, for example, a reduction in the stamp duty rate from 0.5% to 0.25% would deliver benefits that are similar to around 50% of the benefits observed in the case of abolition, although increases in the trading activity subject to stamp duty might, other things being equal, reduce these benefits to around 40% of those observed in the case of abolition.

Therefore, if the stamp duty rate were reduced—for example, from 0.5% to 0.25%—this would deliver around 50% of the reduction in the cost of capital associated with the abolition of stamp duty. The precise nature of the impact would, however, depend on factors such as the impact of a reduction in the stamp duty rate on investors' expectations (ie, expectations of future changes in the stamp duty rate), and on the trading behaviour of investors (eg, the attractiveness of the cash equity route compared with the derivatives route for gaining exposure to the UK equity markets).

At the same time, a gradual abolition of stamp duty would be likely to have a partial impact on the cost of equity and cost of capital. For example, a firm commitment by the government to abolish stamp duty over a five-year period would, other things being equal, be likely to result in an immediate reduction in the nominal post-tax cost of equity of UK listed companies of 6.3–7.7%, and a reduction in the nominal post-tax cost of capital of UK listed companies of 4.9–5.9%.

4.4 Differences across sectors—potential cost of equity impact

This section sets out the results of the analysis of the impact of stamp duty across different sectors. The analysis focuses on estimating the differences in the cost of equity impact across sectors, as well as differences in other characteristics (eg, fixed investment intensity) that might determine the impact of stamp duty on a given sector.

4.4.1 Dataset

The analysis is carried out using a unique primary dataset relating to the velocity of trading, the proportion of trading volume that is subject to stamp duty, and other characteristics of FTSE All-share companies.

Table 4.1 below summarises the key data used in this analysis. The sample consists of 1,501 company-level annual observations covering FTSE All-share companies over the period between 2004 and 2006. The industry analysis is carried out using a Datastream Level 3 industry classification.[20] This dataset was obtained from the London Stock Exchange and Datastream.

[18] Gearing is estimated as a ratio of total debt to the sum of total debt and book value of equity. Source: Datastream and Oxera calculations.

[19] For illustrative purposes, the nominal cost of capital is calculated based on the average historical equity and debt returns documented in Barclays (2006), gearing of 23.5% (Datastream and Oxera calculations), and assuming a debt premium of 1%.

[20] The Datastream Level 3 industry classification provides a good basis for analysing the cross-industry impacts of stamp duty. In principle, however, similar analysis could be carried out for any other classification of UK listed companies.

Table 4.1 Definitions

	Definition
Velocity of trading	Number of shares traded/number of shares outstanding
Velocity of trading subject to stamp duty	(Number of shares traded/number of shares outstanding) × proportion of trading that is subject to stamp duty
Fixed investment intensity	Fixed-business investment/total assets
Market to book value	Market value of equity/book value of equity
Industry classification	Datastream Level 3 industry classification
Cost of equity impact	(Cost of equity after the abolition of stamp duty – cost of equity before the abolition of stamp duty)/cost of equity before the abolition of stamp duty
Combined fixed investment and velocity measure	Fixed investment intensity × velocity of trading subject to stamp duty
Combined market to book value and velocity measure	Market to book value × velocity of trading subject to stamp duty

Source: Oxera.

4.4.2 Velocity subject to stamp duty

The cost of equity impact of stamp duty on a particular company depends on the amount of stamp duty that investors expect to pay when trading in shares of this company in the future. The impact therefore depends both on the velocity of trading in shares of this company and the proportion of trading that is subject to stamp duty.[21] Greater velocity of trading implies a greater cost of equity impact, and a greater proportion of trading subject to stamp duty also implies a greater impact on stamp duty. In other words, stocks where investors pursue high-velocity strategies and where a high proportion of trading originates from the direct investments of institutional investors (and therefore is not exempt from stamp duty through an intermediary relief) are likely to have the strongest impact of stamp duty.

The analysis of the cost of equity impact of stamp duty is based on a unique cross-sectional company-level dataset (Table 4.1). This is, to the best of Oxera's knowledge, the first time that such a large dataset containing estimates of the proportion of trading that is subject to stamp duty has been used to estimate the effects of stamp duty on the cost of equity.

Table 4.2 below summarises the results at the industry level. The table shows the value-weighted velocity of trading subject to stamp duty observed across different sectors over the period 2004–06. The table suggests that there are significant differences across sectors, which implies that, other things being equal, the abolition of stamp duty would be likely to have different impacts across sectors.

[21] As a result of the intermediary tax relief, only part of the trading activity in UK listed companies is subject to stamp duty.

Table 4.2 Velocity of trading subject to stamp duty, 2004–06

Industry	Velocity of trading subject to stamp duty	Industry	Velocity of trading subject to stamp duty
Technology	0.72	Utilities	0.50
Travel & leisure	0.69	Construction & materials	0.47
Retail	0.67	Telecommunications	0.44
Financial services	0.64	Insurance	0.43
Industrial goods & services	0.60	Personal & household goods	0.42
Automobiles & parts	0.60	Food & beverages	0.39
Media	0.57	Banks	0.30
Basic resources	0.56	Healthcare	0.30
Chemicals	0.54	Oil & gas	0.26

Source: London Stock Exchange, Datastream and Oxera calculations.

4.4.3 The cost of equity impact

For the purposes of this study, it is assumed that differences in the cost of equity impact across companies are approximately proportional to the differences in the velocity of trading subject to stamp duty. In other words, it is assumed that the effect of stamp duty abolition on the cost of equity in industries with velocity of trading subject to stamp duty equal to the median observed across all sectors would equal the cost of equity impact observed in the market as a whole; while the cost of equity impact on industries with velocity of trading subject to stamp duty that is, for instance, 20% higher than the median would be 20% higher than that observed in the market as a whole.

Table 4.3 sets out the average impact of stamp duty across different sectors based on evidence for the period 2004–06. The table suggests that there are significant differences in the likely effect of stamp duty abolition on companies across sectors. For example, abolition of stamp duty would be likely to reduce the cost of equity of technology companies by around 10–12%, while the cost of equity of oil and gas companies would be likely to decrease by around 4%.

Table 4.3 The cost of equity impact across sectors

Industry	The cost of equity impact (%)	Industry	The cost of equity impact (%)
Technology	10–12	Utilities	7–8
Travel & leisure	9–11	Construction & materials	6–8
Retail	9–11	Telecommunications	6–7
Financial services	9–10	Insurance	6–7
Industrial goods & services	8–10	Personal & household goods	6–7
Automobiles & parts	8–10	Food & beverages	5–6
Media	8–9	Banks	4–5
Basic resources	8	Healthcare	4–5
Chemicals	7–9	Oil & gas	4

Source: London Stock Exchange, Datastream and Oxera calculations.

4.5 Differences across sectors—investment and growth potential

In addition to considering differences in the way in which stamp duty affects the cost of equity of companies from different sectors, it is informative to consider other aspects of companies' activities that result in a potentially disproportionate impact of stamp duty. This element of the analysis considers differences in the fixed investment intensity[22] and growth potential of companies in different sectors.

4.5.1 Fixed investment intensity

As fixed investment activity is particularly sensitive to changes in the cost of capital, sectors with companies that have high capital intensity are likely to be more affected by stamp duty. Therefore, the distribution of fixed-investment intensity across sectors provides an indication of which sectors are likely to be more affected. Table 4.4 presents the fixed investment intensity across sectors for the period 2004–06, showing that, other things being equal, the oil and gas, basic resources and retail sectors appear to be most affected by stamp duty.

At the same time, companies are particularly affected by stamp duty if, in addition to high capital intensity, their cost of capital is strongly affected by stamp duty. In other words, companies with high capital intensity (column 2 of Table 4.4), and a high cost of equity impact (see Table 4.3) appear to be most affected by stamp duty. A robust measure combining the fixed investment intensity and cost of equity is not available, although an indication of the sectors that would be most affected can be obtained by considering a multiple ('combined measure') of fixed investment intensity and velocity of trading subject to stamp duty.

The third column in Table 4.4 sets out estimates of the multiple of fixed investment intensity and velocity subject to stamp duty over the period 2004–06. The table shows that the retail, basic resources, and automobiles and parts sectors appear to be most affected.

Table 4.4 Fixed investment intensity and combined measures, 2004–06

Industry	Fixed investment intensity	Combined fixed investment and velocity measure	Industry	Fixed investment intensity	Combined fixed investment and velocity measure
Oil & gas	0.13	0.03	Telecommunications	0.06	0.03
Basic resources	0.12	0.07	Construction & materials	0.06	0.03
Retail	0.12	0.08	Financial services	0.05	0.03
Automobiles & parts	0.11	0.07	Food & beverages	0.05	0.02
Utilities	0.09	0.05	Technology	0.04	0.03
Chemicals	0.08	0.04	Media	0.03	0.02
Travel & leisure	0.08	0.06	Personal & household goods	0.02	0.01
Industrial goods & services	0.08	0.05	Banks	0.01	0.00
Healthcare	0.07	0.02	Insurance	0.01	0.00

Source: London Stock Exchange, Datastream and Oxera calculations.

[22] Fixed-investment intensity is defined as the ratio of fixed business investment to the total assets of the company.

4.5.2 Growth versus value

Similarly to the fixed investment intensity, sectors with high growth potential are also, other things being equal, more sensitive to changes in the cost of capital, and are therefore potentially disproportionately affected by stamp duty. Market to book ratios across sectors provide an indication of which sectors are likely to be more affected. Table 4.5 sets out the growth potential across sectors for the period 2004–06, showing that, based on this measure, the telecommunications, technology, and industrial goods & services sectors are likely to be most affected by stamp duty.

As with the analysis of fixed investment intensity, the strongest effect is predicted for industries with a high cost of equity impact and a high growth potential. The multiple ('combined measure') of velocity subject to stamp duty and the market to book ratio provides an indication of which sectors are likely to be more affected. Table 4.5 sets out estimates of the multiple of growth potential and velocity subject to stamp duty over the period 2004–06.

Table 4.5 Market to book ratios and combined measures, 2004–06

Industry	Market-to-book ratio	Combined market to book value and velocity measure	Industry	Market-to-book ratio	Combined market to book value and velocity measure
Telecommunications	4.54	2.00	Food & beverages	2.21	0.87
Technology	3.57	2.57	Travel & leisure	2.06	1.42
Industrial goods & services	3.25	1.94	Retail	2.04	1.37
Healthcare	2.90	0.86	Banks	1.95	0.58
Media	2.80	1.60	Financial services	1.76	1.13
Oil & gas	2.74	0.72	Personal & household goods	1.73	0.73
Construction & materials	2.37	1.11	Utilities	1.70	0.85
Automobiles & parts	2.35	1.40	Insurance	1.26	0.54
Chemicals	2.25	1.21	Basic resources	1.16	0.65

Source: London Stock Exchange, Datastream and Oxera calculations.

4.6 Impact on capital investment activity

The cost of capital is one of the determinants of the level of fixed business investment by companies. This aspect of the analysis provides estimates of the increases in the fixed business investment that would be likely to occur if stamp duty were to be abolished.

4.6.1 Aggregate impact

The relationship between the cost of capital and investment has been studied extensively in the academic literature. Most estimations of the investment cost of capital elasticities[23] documented in these studies fall within the range of –0.5 to –1.0.

In financial year ending 2006, the total capital expenditure (additions to fixed assets) of FTSE 350 companies was around £98.3 billion.[24] Assuming an investment cost of capital elasticity

[23] This elasticity captures the relationship between a one-off permanent change in the cost of capital of companies, and permanent increase in the annual fixed business investment.

of –0.5 to –1.0, the abolition of stamp duty could result in a one-off increase in the capital base of UK listed companies, leading to a long-run increase in the level of annual capital investment of £2.7 billion to £6.4 billion. In comparison, Oxera (2001) estimated the increase in capital investment as a result of stamp duty abolition to be up to £3.4 billion.

4.6.2 Impact across sectors

The overall impact on fixed investment can be broken down into the effects on different sectors. Table 4.6 documents the predicted increase in fixed investment of FTSE 350 companies in a number of sectors (based on fixed investment levels observed in 2006). These estimations are made under the assumptions that stamp duty abolition would result in a similar cost of equity impact across sectors (case 1), and that the cost of equity would be affected in proportion to the velocity of trading subject to stamp duty (case 2). However, annual fixed business investment at the sectoral level is relatively volatile, and therefore fixed investment increases based on the level of investment observed in 2006 should be considered as indicative only.

Table 4.6 Increase in fixed investment

	Fixed investment	Cost of equity impact (%)		Increase in annual fixed investment	
	(£m)	Case 1	Case 2	Case 1	Case 2
Technology	95.3	7–8.5	10–12	7.3–17.7	10.4–25.0
Retail	5,920	7–8.5	9–11	168.9–410.3	217.2–530.9
Telecoms	7,910	7–8.5	6–7	218.7–531.2	187.5–437.5

Source: Datastream and Oxera calculations.

Table 4.6 suggests that stamp duty abolition would be likely to result in a significant increase in the fixed investment in these sectors. For example, fixed investment in the telecoms sector could be expected to increase by as much as £531.2m annually.

It is important to note that these are indicative figures only, and that, in practice, there would be other factors (eg, the presence of NPV-positive investment opportunities, corporate financing decisions, business cycle) that would have an impact on the investment decisions.

4.7 Private versus public equity

The impact of stamp duty on public equity differs from that on private equity. In particular, due to the higher frequency with which public equities are bought and sold (ie, the velocity of trading), stamp duty has a significantly stronger effect on the cost of equity of publicly listed companies. While the cost of equity of UK listed companies is by 7–8.5% higher than it would be if stamp duty were abolished, the effect of stamp duty on the cost of equity of private equity companies is likely to be negligible. This is therefore expected to be a relevant factor when choosing between public and private equity financing.

[24] Where estimates of the capital expenditure in the financial year ending 2006 were not yet available, it is assumed that the expenditure is equal to that observed in the financial year ending 2005. Source: Datastream and Oxera calculations.

5 Impact on trading activity

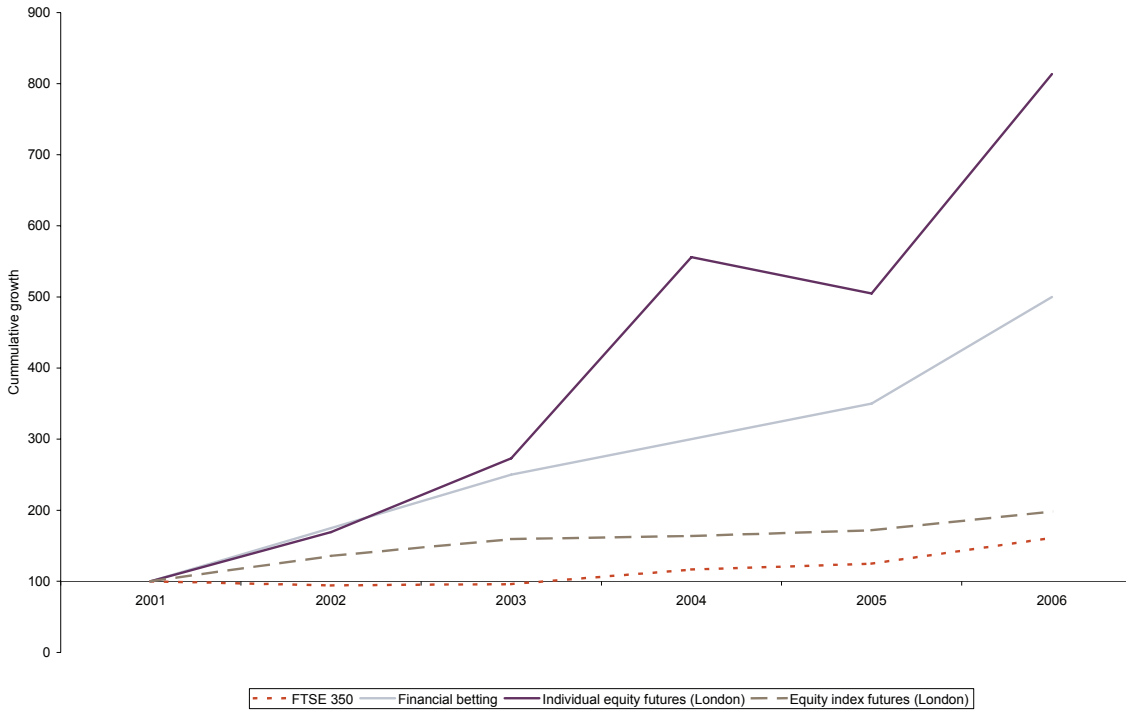
This section presents the results of the assessment of the impact of stamp duty on trading activity, focusing on an assessment of the changes in the way investors access equity markets, the effect of stamp duty on the relative attractiveness of cash equity and derivatives markets, and the impact of changes in the way individuals trade on secondary markets.

This analysis provides insights into the way in which markets are changing, and the way in which stamp duty incidence might change in the future; the potential further impact of stamp duty on the cost of capital and wider economy through reduced liquidity and an increase in the indirect trading costs; and the potential impacts of stamp duty on transparency and corporate governance quality in UK equity markets.

5.1 Overall trends in trading activity

The way in which individuals trade is changing. There has been a significant growth in financial betting, contracts for differences (CFDs)[25] and equity derivative products, while cash equity trading has experienced lower growth. For example, Figure 5.1 illustrates changes in the growth in trading activity in cash equities, financial betting, individual equity futures, and index equity futures over the past six years.

Figure 5.1 Trading activity in cash equities, financial betting and derivatives



Source: Euronext.Liffe, Celent, Datastream and Oxera calculations.

Cash equities, CFDs and futures are potentially good substitutes for gaining exposure to equity markets. Equity pay-offs can, in general, be replicated through CFDs and futures, and

[25] CFDs are derivative products that allow investors to gain exposure to the individual stocks, equity indices and other securities without buying or selling underlying securities. Transactions in CFDs are exempt from stamp duty payments.

CFDs and futures are available for most UK equities. Interviews with market participants have confirmed that, for some investors, equities and CFDs are good substitutes for gaining exposure to individual equities, and equities and index futures are good substitutes for gaining exposure to the wider market.

However, the way in which stamp duty might affect trading behaviour is complex. Evidence obtained through the interviews with market participants, and that presented in the secondary literature, suggests that there are a number of factors that determine the relative attractiveness of equity and derivatives routes.

– **The level of sophistication and 'risk aversion'**. More sophisticated and less risk-averse investors are more likely to gain exposure to equity markets by using derivative instruments.

– **The willingness to participate in the governance of public companies**. Since holding futures, options or CFDs written on the stock of a given listed company does not allow the investors to participate directly in their governance (eg, by voting at annual general meetings), investors willing to participate in the governance of a company are restricted to investing through the direct cash equities route (ie, by buying companies' stocks).

– **Investment restrictions**. Some investor classes (eg, municipal pension funds) are constrained in the use of derivatives by investment restrictions.

– **Type of investment strategy**. There is a trade-off between stamp duty (equities) and interest payments (CFDs). Since stamp duty payments vary with trading velocity, while interest payments are largely independent of trading velocity, switching to CFDs is more attractive for high-velocity strategies.

Stamp duty is one of the factors affecting the relative attractiveness of different investment routes. Interviews with market participants have confirmed that, for some investors, stamp duty is one of the key factors leading to the use of the derivatives route for accessing equity markets for some strategies (particularly high-velocity strategies).

Growth in trading activity across products and countries provides evidence that is consistent with the impact of stamp duty on the way in which people trade. In particular, there are 125,000 active financial bettors, and 425,000 individuals with financial betting accounts globally—90% of whom are based in the UK.[26] Although this evidence should be treated with caution, as data on the geographic distribution of activity (ie, what proportion of UK-based investors trade in UK and non-UK equities) is not available. The UK also appears to have experienced the highest growth in CFD activity, followed by Australia and other countries. The disproportionate growth in CFD activity in the UK (compared with other countries) is consistent with the hypothesis that stamp duty is one of the factors affecting investors' behaviour.

5.2 How does stamp duty affect secondary markets?

The abolition of stamp duty is likely to increase liquidity, further affecting the cost of capital, returns, and risks facing investors.

5.2.1 What is the impact on trading activity?

Stamp duty has a potentially significant impact on the trading activity in UK listed equities. In particular, there is considerable evidence showing that transaction costs affect the level of

[26] Source: Celent (2005).

trading activity. For instance, Ericsson and Lindgren's 1992 analysis of 23 stock markets from 1980 to 1989 shows that elasticity of trading activity to transaction costs is –1.0, while Lindgren and Westlund's 1990 analysis of the Stockholm Stock Exchange from 1970 to 1988 finds the elasticity of trading activity to transaction costs to be –0.85 to –1.35. Based on this evidence, the analysis of the impact of stamp duty on liquidity in the UK equity markets is therefore based on the assumption that elasticity of trading activity to transaction costs is –1.0.

Elkins & McSherry data suggests that stamp duty constitutes around 50% of total trading costs faced by institutional investors in the UK. Therefore, given elasticity of trading activity to transaction costs of –1.0, stamp duty abolition is likely to increase trading volume that is subject to stamp duty by around 50%. Given that, in 2005, the proportion of trading subject to stamp duty was around 29%,[27] stamp duty abolition would be likely to increase total trading activity in UK listed companies by around 14.4%.

Furthermore, the introduction of, and/or increase in, transaction taxes might affect the location of trading activity without directly affecting the overall level of activity. For instance, Umlauf (1993) found that, following the doubling of the transaction tax in Sweden in 1986, around 60% of trading volume in 11 of the most actively traded stocks on Stockholm stock exchange migrated to London. Given the structure of stamp duty (ie, it is levied on UK stocks independently of where they are traded), stamp duty does not affect the attractiveness of different venues for carrying out transactions, although this example illustrates the propensity of investors to use more efficient routes in order to avoid transaction taxes.

5.2.2 What is the cross-sectional impact on liquidity?

The way in which investors trade in markets is changing, and these changes are potentially affecting the liquidity of UK listed companies. The analysis of the way changes in the capital markets might be affecting the liquidity of individual companies is based on a unique cross-sectional company-level dataset. This is, to the best of Oxera's knowledge, the first time that such a large dataset containing estimates of the proportion of trading that is subject to stamp duty has been used to estimate changes in the liquidity of UK listed companies.

The analysis suggests that changes in the way individuals trade appear to be affecting different-sized companies in different ways.

– The velocity of trading in small companies (companies outside the FTSE 350) does not appear to have changed significantly over recent years compared with a significant increase in the velocity of trading in large and medium-sized companies (companies in the FTSE 350).

– The proportion of trading that is subject to stamp duty (ie, trading related to direct activity in cash equity markets) in small companies appears to have declined slightly over recent years compared with a more significant decline in the proportion that is subject to stamp duty in large and medium-sized companies.

Therefore, the abolition of stamp duty would be likely to have differing effects on liquidity in small and large stocks, although further analysis is required to establish the precise nature of the impact on these stocks.

5.3 Other behavioural distortions introduced by stamp duty

Interviews with market participants indicate a number of further perceived inefficiencies and/or behavioural distortions associated with stamp duty:

[27] Source: HMRC, Datastream and Oxera calculations.

– **corporate governance**—investors wishing to participate in the governance of public companies (eg, by voting at annual general meetings) are required to hold stock directly; since stamp duty applies to trading in stocks only, but not derivatives, stamp duty is effectively penalising participation in corporate governance;

– **transparency of markets**—the migration of activity to CFDs and other derivatives is affecting the quality of markets;

– **distributional effects**—some investors are restricted and cannot therefore take advantage of CFDs and derivatives;

– **quality of fund management**—tracking efficiency in passive funds is reduced due to high transaction costs.

With respect to corporate governance, the interviews highlighted a number of specific issues. For example, market participants have argued that stamp duty effectively penalises investors seeking to influence companies' activities through direct ownership of equities.

At the same time, while recognising the potential beneficial impact of derivatives markets for cash equity markets, market participants argued that, where there is significant economic exposure through derivatives, the quality of the market and/or activities of companies might be affected. For instance, decoupling of the ownership and economic interest of derivatives investors potentially results in skewed incentives for investors. At the same time, management's incentives to act in the best interest of equity owners might be skewed as they seek to cater for the interests of indirect owners.

5.4 Impact on the attractiveness of UK stocks—case study

Stamp duty has a direct effect on the profitability of investments in UK stocks. Section 3 provides direct estimates of the cost of stamp duty to investors. An alternative approach is to consider the effect of stamp duty on the profitability of specific investment strategies by back-testing returns with and without stamp duty.

An analysis carried out by a large UK fund manager interviewed for this study provides an insight into the effect of stamp duty.[28] This analysis uses the quantitative strategy of one UK fund manager to test the effect of stamp duty on the profitability of this (standard) strategy focused on UK and European stocks. With respect to UK portfolios, the analysis suggests that stamp duty reduces the information ratio[29] by around 10%. At the same time, with respect to European portfolios, stamp duty reduces information ratios by around 5%. Moreover, in the latter case, stamp duty also reduces the relative attractiveness of UK stocks compared with other European stocks.

5.5 Trading behaviour going forward

The effect of stamp duty on the behaviour of investors is likely to change over time. There are a number of factors that suggest that the relative attractiveness of the derivatives route is likely to increase in the foreseeable future.

– Interviews with market participants suggest that there is likely to be a relaxation of the implicit and explicit factors that restrict the use of derivatives.

[28] The methodology and data sources used in these estimations were not provided.

[29] Information ratio is defined as a ratio of expected returns to risk.

– The interviews also suggest that increased transparency and other changes in equity trading market structures (eg, due to the introduction of MiFID) are likely to increase the importance of stamp duty and other transaction costs.

– A continued increase in the overall trading activity (velocity) in trading strategies is likely to increase further the attractiveness of the derivatives route for gaining exposure to equities (ie, due to the trade-off between stamp duty and interest payments, the choice of derivatives markets to gain access to equity markets becomes more attractive).

Overall, therefore, stamp duty is likely to play an increasing role in determining the relative attractiveness of accessing UK equity markets through cash equity or derivatives routes.

6 Impact of stamp duty abolition on the economy

This section presents the results of the assessment of the impact of stamp duty abolition on the economy, focusing on the impact of the abolition of stamp duty on fixed business investment, GDP and government tax-take.

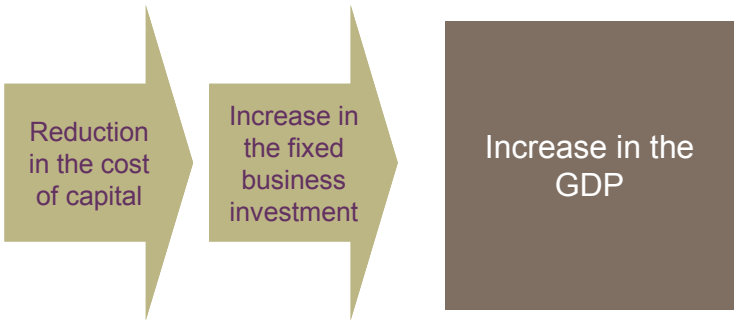
6.1 Analysis

6.1.1 Framework

The impact of stamp duty abolition on GDP and the government's tax-take can be estimated by considering the way in which stamp duty abolition affects the cost of capital and fixed business investment of UK listed companies. Figure 6.1 summarises the way in which stamp duty abolition would affect the level of GDP.

First, abolition of stamp duty would result in a reduction in the cost of capital of UK listed companies. Analysis in section 3 above summarises the results of the assessment of the reduction in the cost of capital of UK listed companies that would be likely to arise in the case of stamp duty abolition. Second, a reduction in the cost of capital of UK listed companies would be likely to result in increased fixed business investment. The evidence on the likely increases in the fixed business investment in the UK as a result of the stamp duty abolition is summarised in section 4. Third, an increase in the fixed business investment would be likely to result in an increase in the level of GDP in the UK. Finally, higher GDP would result in a higher tax-take by the UK government.

Figure 6.1 The impact of stamp duty



Source: Oxera.

6.1.2 Estimates of relevant parameters

Over the years, the links between the cost of capital, capital stock and GDP have been studied in considerable detail in academic studies. Evidence from these studies is used to assess the impact of the likely reduction in the cost of capital of UK listed companies as a result of the abolition of stamp duty on the GDP and government tax-take. In other words, based on the various elasticities developed in the academic literature, it is possible to estimate the elasticity of the UK GDP level to the changes in the cost of capital of UK listed companies.

Table 6.1 summarises the relevant parameters used in the analysis. These estimates are based on data from ONS, Datastream and academic studies on the link between the cost of capital, fixed business investment and GDP.

Table 6.1 Estimates of parameters

Factor	Estimate	Source
Impact of stamp duty abolition on the cost of capital	–5.4% to –6.5%	Oxera calculations
Fixed investment user cost of capital elasticity	–0.5 to –1.0	Hassett and Hubbard (1996), Cummins, Hassett and Hubbard (1994), Cummins, Hassett and Hubbard (1996), Auerback and Hassett (1991), and other studies
Ratio of UK fixed business investment of UK publicly listed companies to total UK private fixed business investment	0.3 to 0.4	HMRC, Datastream and Oxera
GDP per capita private fixed investment elasticity	0.3	Bassanini and Scarpetta (2001)

6.1.3 Impact on GDP level and government's tax-take

The framework and assumptions set out in sections 6.1.1 and 6.1.2 allow the link between the cost of capital of UK listed companies and GDP to be estimated directly. In particular, based on the assumptions set out in Table 6.1, the abolition of stamp duty would be likely to result in an increase in the UK GDP level by between 0.24% and 0.78%.[30] In other words, as a result of stamp duty abolition, the UK GDP would be permanently higher by around 0.24% to 0.78%, although this effect would only materialise in full in the long run.

Given the current UK GDP of £1,225,339m,[31] this is equivalent to a permanent increase of £2,978m to £9,558m. The long-term impact on the government's tax-take can then be estimated by considering the total tax burden relative to the GDP. In particular, assuming an overall tax burden of 42.6%,[32] the abolition of stamp duty would be predicted in the long run to increase the government's annual tax-take by £1,268m to £4,071m (minus the £2,930m reduction in the annual tax-take due to the loss of stamp duty receipts).

A reduction in the stamp duty rate would also be likely to have a significant impact on UK GDP and the government's tax take. In particular, the impact of a one-off permanent stamp duty reduction on the level of GDP and tax-take associated with the increased level of economic activity would be likely to be approximately proportional to the reduction in the stamp duty rate. Therefore, if the stamp duty rate were reduced, for example, from 0.5% to 0.25%, this would be likely to deliver around 50% of the changes in the GDP and tax-take associated with the abolition of stamp duty.

Although the increases in the tax-take associated with increased economic activity would be likely to be proportional to the reduction in stamp duty rate, the reduction in direct stamp duty receipts would be somewhat smaller than the reduction in the stamp duty rate. This effect would arise due to the increases in trading activity that would be likely to arise as a result of the reduction in the stamp duty rate. For example, a 50% reduction in the stamp duty rate could increase trading activity subject to stamp duty by around 25%. (Section 4 provides a description of the link between stamp duty and trading activity subject to stamp duty.) Such a reduction in the stamp duty rate would therefore be likely to reduce direct stamp duty receipts by 38%, or from £2,930m to £1,831m.

At the same time, a gradual abolition of stamp duty would have a somewhat different impact on the overall tax-take of UK government. First, a firm commitment by the government to

[30] The low case is estimated as a multiple of the low-case estimates for the individual parameters, while the high case is estimated as a multiple of the high-case estimates for the individual parameters.

[31] Source: ONS.

[32] These calculations assume that the government's tax-take would increase in line with the increases in the economic growth. It is, however, possible that the effective tax rate associated with the economic growth driven by increases in the fixed business investment could be somewhat different from the overall effective tax rate.

abolish stamp duty over, for instance, a five-year period would deliver as much as 90% of the reduction in the cost of capital of UK companies at the time of the announcement. Therefore the long-run benefits (and timing of those benefits) associated with the increased fixed investment and increased GDP would be similar to those observed in the case of immediate abolition.

The effect of gradual abolition on the government's stamp duty receipts would be somewhat different than observed in the case of immediate abolition. The reduction in the stamp duty receipts in the case of gradual abolition would follow the pattern of reduction in the stamp duty rate, although the initial reduction in stamp duty revenues would be somewhat lower than the reduction in the stamp duty rate due to the increased trading activity resulting from the reduction in the stamp duty rate. Assuming a velocity transaction cost elasticity of –1.0, gradual stamp duty abolition over a five-year period would result in the following stamp duty take: 88% of the current take (around £2,578m) in year 1; 73% (£2,149m) in year 2; 55% (£1,612m) in year 3; 31% (£921m) in year 4, and 0% from year 5 onwards.[33]

6.2 Impact of the reduced cost of capital on the level of GDP and the government's tax-take—alternative approach

In 2006 the European Commission carried out an impact assessment of the potential economic effects of the reduction in transaction costs across the EU. This assessment found that integration of European capital markets would result in an 18% reduction in transaction costs (ie, $\Delta tc/tc = -18\%$). It predicted that this reduction would be likely to result in an increase in the European GDP by £62 billion, or 0.6%. This implied an elasticity of GDP growth to transaction costs of –0.033.

In applying a similar approach to the UK, it is possible to estimate the predicted impact on GDP of a reduction in transaction costs due to stamp duty abolition. In particular, stamp duty abolition would reduce trading costs by 21–50%. In applying an elasticity of GDP growth to transaction costs of –0.033, the abolition of stamp duty would be predicted to result in a permanent increase in GDP of 0.7–1.65%, or equivalently £8,492m–£20,218m.

Assuming that tax-take grows in proportion to GDP and a tax burden of 42.6%, the abolition of stamp duty would be predicted to increase revenue to the Exchequer by £3,617m to £8,612m annually (minus a £2,930m reduction due to the loss of stamp duty receipts).

6.3 Other potential tax effects

It is also informative to estimate the impact of stamp duty abolition on government tax-take under alternative assumptions, particularly in relation to the degree to which stamp duty is discounted into stock prices. There is strong academic evidence to suggest that transaction costs are discounted into stock prices (ie, the case modelled above); however, it is possible that a proportion of stamp duty may not be discounted into stock prices.

If stamp duty is not discounted into stock prices, the impact on the government's tax-take would depend on the behaviour of investors in the case of stamp duty abolition.

– Assuming that investors consume stamp duty savings, while keeping net contributions constant, the first-round effects on the government's tax-take would arise from increased income tax and VAT receipts.

[33] These impacts might be slightly altered—ie, the loss of stamp duty during the gradual abolition period might be somewhat larger—by deferred trading of investors expecting a reduction in the stamp duty rate. This effect, however, is likely to be very small.

– Assuming that investors keep their gross contributions constant, there would be likely to be an increase in the government's tax-take associated with increased income at retirement.

Finally, stamp duty abolition would also have a one-off impact on capital gains tax receipts. The increase in capital gains tax receipts is calculated according to a number of assumptions:

– the abolition of stamp duty results in a share price increase of around 7.2%;
– if there were no change in the stamp duty rate, the disposal value of ordinary shares listed on the London Stock Exchange and subject to capital gains tax would remain at the 2003/04 level (£5,425 billion)[34];
– the average effective capital gains tax (capital gains tax paid over the amount of capital gains subject to capital gains tax) is around 30%;[35]
– velocity of share turnover of companies subject to stamp duty of 0.43.[36] The velocity of 0.43 implies that, on average, shares are sold once every 28 months.

Based on the above assumptions, the total value of holdings relevant for calculating the extra capital gains tax that would be affected by the abolition of stamp duty equals £12,450 billion (this is the value of holdings that is consistent with the annual disposed value of around £5,425 billion and velocity of trading of 0.43). A 7.2% increase in the value of holdings associated with the stamp duty abolition could therefore result in a one-off increase in capital gains tax revenues of around £272m, or £281m in terms of 2004/05 prices.

[34] Source: HMRC.
[35] Source: HMRC and Oxera calculations.
[36] Source: UBS (2006).

7 Conclusions

The results of the analysis of the impact of stamp duty suggest that it has a potentially significant effect on investors, companies and the wider economy.

– Stamp duty constitutes a significant cost to individuals, households and pensioners. In particular, a significant proportion of total annual stamp duty revenue is derived from pension funds, savings and other investments managed by insurance firms and individual stock holdings. At the same time, stamp duty constitutes a considerable cost to the pensioner throughout the lifetime of their savings, resulting in a significant effect on the size of total pension savings at retirement.

– Stamp duty could increase the cost of capital of UK listed companies, potentially resulting in lower growth and lower capital expenditure. Moreover, the effect of stamp duty abolition is likely to differ across companies and sectors. At the same time, stamp duty has a potentially much stronger negative effect on the cost of capital of UK public companies than UK private companies.

– Stamp duty also affects the trading behaviour of investors, potentially resulting in lower liquidity in equity markets. Moreover, changes in the way individuals trade are potentially affecting the quality of secondary equity markets due to corporate governance-related distortions.

– Finally, stamp duty abolition could result in increased aggregate fixed investment, higher GDP and an associated increase in the tax-take. In the long run, the tax-take increases associated with increased fixed business investment and economic activity could offset the loss of the direct stamp duty receipts.

8 References

Auerback, A.J. and Hassett, K. (1991), 'Recent US investment behavior and the Tax Reform Act of 1986: a disaggregate view', Carnegie-Rochester Conference Series on Public Policy, **35**, 185–215.

Bassanini, A. and Scarpetta, S. (2001), 'The driving forces of economic growth: panel data evidence for the OECD countries', OECD Economic Studies No. 33.

Bryne, A., Blake, D., Cairns, A. and Dowd, K. (2005), 'The stakeholder pension lottery? An analysis of the default funds in UK stakeholder pension schemes', February, Pensions Institute, Discussion paper PI-0411.

Celent (2005), 'Financial Betting: UK Traders Play to Win'.

Cornwall County Council (2006), 'Pension fund—Annual report and accounts 2005/06', August.

Cumbria Local Government Pension Scheme (2006), 'Annual report and accounts 2005/06'.

Cummins, J.G., Hassett, K.A. and Hubbard, R.G. (1994), 'A reconsideration of investment behavior using tax reforms natural experiments', *Brookings Papers on Economic Activity*, **2**, 1–74.

Cummins, J.G., Hassett, K.A. and Hubbard, R.G. (1996), 'Tax reforms and investment: a cross-country comparison', *Journal of Public Economy*, **62**, 237–73.

Domowitz, I. and Steil, B. (2001), 'Innovation in Equity Trading Systems: The Impact on Transaction Costs and Cost Of Capital', in B. Steil, D. Victor, R. Nelson (eds.) (2002), *Technological Innovation and Economic Performance*, Princeton University Press.

DWP (2004), 'Family resources survey—United Kingdom 2004/2005', Department for Work and Pensions.

DWP (2006a), 'Security in retirement: towards a new pensions system', May, Department for Work and Pensions.

DWP (2006b), 'Personal accounts: a new way to save', December, Department for Work and Pensions.

Ericsson, J. and Lindgren, R. (1992), 'Transaction Taxes and Trading Volume on Stock Exchanges: An International Comparison', Stockholm School of Economics Working Paper, No. 39.

FSA Comparative tables, Financial Services Authority website, www.fsa.gov.uk.

GAD (1998), 'GAD survey of expenses of occupational pension schemes', Government's Actuary Department.

GAD (2004), 'Occupational pension schemes survey', 12th survey by the Government's Actuary Department.

Hassett, K.A and Hubbard, R.G. (1996), 'Tax policy and investment', NBER working paper No. W5683.

HM Revenue and Customs website, www.hmrc.gov.uk.

IMA (2006), 'Asset Management Survey', July, Investment Management Association.

Jackson, P. and O'Donnell, A. (1985), 'The Effects of Stamp Duty on Equity Transactions and Prices in the UK Stock Exchange', Bank of England Discussion Paper, No. 25.

Lindgren, R. and Westlund, A. (1990), 'How Did Transaction Costs on the Stockholm Stock Exchange Influence Trade and Price Volatility?', *Skandinaviska Enskilda Banken Quarterly Review*, **2**, 30–5.

London Borough of Southwark Pension Fund (2003), 'Annual report 2002/03'.

ONS (2006a), 'Annual survey of hours and earnings', October, Office of National Statistics.

ONS (2006b), 'United Kingdom National Accounts—The Blue Book 2006', August, Office of National Statistics.

Oxera (2001), 'Impact of stamp duty on the cost of capital of UK listed companies'.

Pension Commission (2004), 'Pensions: Challenges and Choices—The first report of the pension commission', November.

PIMA (2006), 'Quarterly PIMA CTF survey', December, PEP and ISA Managers' Association.

Royal Borough of Kensington and Chelsea (2005), 'Pension fund report and accounts 2004/05', July.

Schultz, P (2001), 'Corporate bond trading costs: A peek behind the curtain', April, *Journal of Finance*, **LVI**:2, 677–98.

UBS (2006), 'Pension Fund Indicators 2006', May, UBS Global Asset Management.

UK stakeholder pension providers' websites.

Umlauf, S.R. (1993), 'Transaction Taxes and the Behaviour of the Swedish Stock Market', *Journal of Financial Economics*, **33**, 227–40.

Virgin Money (2003), 'Virgin comment on child trust funds', press release, October 28th, http://uk.virginmoney.com/newscentre/press-releases/2003/virgin-comment-on-child-trust-funds.html.

Barclays (2006), 'Equity Gilt Study 2006', February, 51st edition, Barclays Capital.

Teesside Pension Fund (2006), 'Annual report 2005/06', Middlesbrough Council.

Tyne and Wear Pension Fund (2006), 'Report and accounts 2005/06', South Tyneside Council.

Appendix 1 Modelling assumptions

Tables A1.1 to A1.4 document assumptions used in the modelling of stamp duty costs associated with different saving profiles.

Table A1.1 Assumptions table—occupational pension

Section	Factor	Balanced	Equity-based	Source
Contributions	Earnings at age 25	£19,499	£19,499	ONS (2006a)
	Average nominal growth of earnings	4.7%	4.7%	ONS (2006a)
	Employee contribution rate	2.9%	2.9%	UBS (2006)
	Employer contribution rate	6.2%	6.2%	UBS (2006)
Asset allocation	UK equity proportion	34%	52%	UBS (2006)
	Bonds proportion	34%	0%	UBS (2006)
Asset returns	Return on bonds (nominal)	7.5%	7.5%	Barclays (2006)
	Return on equity (nominal)	9.4%	9.4%	Barclays (2006)
Velocity of trading in average fund	UK equity	43%	43%	UBS (2006)
	Non-UK equity	55%	55%	UBS (2006)
	Bonds	68%	68%	UBS (2006)
Costs	AMC	0.4%	0.4%	GAD (1998)
	Trading costs on bonds	0.54%	0.54%	Schultz (2001)
	Trading costs on equity	0.5%	0.5%	Elkins & McSherry
Other	Inflation	2.0 %	2.0 %	
	Age of investor at start of investment period	25 years	25 years	
	Investment length (years)	40	40	
	Tax relief	20% basic rate, 40% higher income	20% basic rate, 40% higher income	
	Lifestyling begins	5 years before end	5 years before end	

Notes: UK equity refers to shares of companies domiciled in the UK that are assumed to be liable for stamp duty payments.
Source: Oxera.

Table A1.2 Assumptions table—stakeholder pension

Section	Factor	Balanced	Equity-based	Source
Contributions	Earnings at age 25	£19,499	£19,499	ONS (2006a)
	Average nominal growth of earnings	4.7%	4.7%	ONS (2006a)
	Employee contribution rate	3.5%	3.5%	GAD (2004)
	Employer contribution rate	3.5%	3.5%	HMRC
Asset allocation	UK equity proportion	55%	69%	Bryne et al. (2005)
	Bonds proportion	20%	0%	Bryne et al. (2005)
Asset returns	Return on bonds (nominal)	7.5%	7.5%	Barclays (2006)
	Return on equity (nominal)	9.4%	9.4%	Barclays (2006)
Velocity of trading in average fund	UK equity	43%	43%	UBS (2006)
	Non-UK equity	55%	55%	UBS (2006)
	Bonds	68%	68%	UBS (2006)
Costs	AMC	1.0%	1.0%	FSA comparative tables
	Trading costs on bonds	0.54%	0.54%	Schultz (2001)
	Trading costs on equity	0.5%	0.5%	Elkins & McSherry
Other	Inflation	2.0 %	2.0 %	
	Age of investor at start of investment period	25 years	25 years	
	Investment length (years)	40	40	
	Tax relief	20% basic rate, 40% higher income	20% basic rate, 40% higher income	
	Lifestyling begins	5 years before end	5 years before end	

Notes: UK equity refers to shares of companies domiciled in the UK that are assumed to be liable for stamp duty payments.
Source: Oxera.

Table A1.3 Assumptions table—proposed system of Personal Accounts

Section	Factor	Passive balanced	Passive equity-based	Mixed balanced	Mixed equity-based	Source
Contributions	Earnings at age 25	£19,499	£19,499	£19,499	£19,499	ONS (2006a)
	Average nominal growth of earnings	4.7%	4.7%	4.7%	4.7%	ONS (2006a)
	Employee contribution rate	4%	4%	4%	4%	Pensions Commission (2004)
	Employer contribution rate	3%	3%	3%	3%	Pensions Commission (2004)
Asset allocation	UK equity proportion	55%	69%	55%	69%	Bryne et al. (2005)
	Bonds proportion	20%	0%	20%	0%	Bryne et al. (2005)
Asset returns	Return on bonds (nominal)	7.5%	7.5%	7.5%	7.5%	Barclays (2006)
	Return on equity (nominal)	9.4%	9.4%	9.4%	9.4%	Barclays (2006)
Velocity of trading in average fund	UK equity	11%	11%	43%	43%	UBS (2006)
	Non-UK equity	15%	15%	55%	55%	UBS (2006)
	Bonds	18%	18%	68%	68%	UBS (2006)
Costs	AMC	0.3%	0.3%	0.6%	0.6%	DWP (2006b), DWP (2006a)
	Trading costs on bonds	0.54%	0.54%	0.54%	0.54%	Schultz (2001)
	Trading costs on equity	0.5%	0.5%	0.5%	0.5%	Elkins and McSherry
Other	Inflation	2.0 %	2.0 %	2.0 %	2.0 %	
	Age of investor at start of investment period	25 years	25 years	25 years	25 years	
	Investment length (years)	40	40	40	40	
	Tax relief	20% basic rate, 40% higher income	20% basic rate, 40% higher income	20% basic rate, 40% higher income	20% basic rate, 40% higher income	
	Lifestyling begins	5 years before end	5 years before end	5 years before end	5 years before end	

Notes: UK equity refers to shares of companies domiciled in the UK that are assumed to be liable for stamp duty payments.
Source: Oxera.

Table A1.4 Assumptions table—CTF

Section	Factor	Balanced	Equity-based	Source
Contributions	Earnings at age 25	n/a	n/a	
	Average nominal growth of earnings	n/a	n/a	
	Contribution rate	£456 pa	£456 pa	Virgin Money (2003)
Asset allocation	UK equity proportion	55%	69%	Bryne et al. (2005), CTF provider websites
	Bonds proportion	20%	0%	Bryne et al. (2005), CTF provider websites
Asset returns	Return on bonds (nominal)	7.5%	7.5%	Barclays (2006)
	Return on equity (nominal)	9.4%	9.4%	Barclays (2006)
Velocity of trading in average fund	UK equity	43%	43%	UBS (2006)
	Non-UK equity	55%	55%	UBS (2006)
	Bonds	68%	68%	UBS (2006)
Costs	Annual management charge	1.5%	1.5%	CTF provider websites
	Trading costs on bonds	0.54%	0.54%	Schultz (2001)
	Trading costs on equity	0.5%	0.5%	Elkins and McSherry
Other	Inflation	2.0 %	2.0 %	
	Age of investor at start of investment period	n/a	n/a	
	Investment length (years)	18	18	
	Tax relief	n/a	n/a	
	Lifestyling begins	5 years before end	5 years before end	

Notes: UK equity refers to shares of companies domiciled in the UK that are assumed to be liable for stamp duty payments.
Source: Oxera.