

Technical Appendixes

Supporting Analysis for SDLT Reform Proposal

Centre for British Progress

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1 Appendix I: Core reform architecture of a Progressive Property Tax

The supplementary mechanisms introduced in the preceding section would operate alongside our main proposal for reforming property taxation: to replace Stamp Duty Land Tax with a Progressive Property Tax system that shifts taxation from the point of exchange to an annual property tax. This transition would enable us to address the fundamental inefficiencies identified in our economic analysis whilst confronting the practical challenge that annual property taxes generate modest initial revenues that compound over decades, while transaction taxes provide immediate substantial collections.

1.1 Rate structure and economic logic

Our proposal would contemplate setting annual rates from 0.2% to 1.2% across the eleven property value bands that preceded the previous reform. These rates are set at a level which would ensure revenue from the reform would never drop below our projection for total revenue from stamp duty when combined with the additional sources of revenue. Below we provide a comparison between the annual payments this regime would entail and compare them with the equivalent upfront tax liability that the current stamp duty regime would entail.

Crucially, we abstract from a number of additional sources of complexity: our analysis focuses exclusively on main rates for property taxation. That is to say, they should be thought of as an average rate between main and secondary property payers. In practice, it would be possible for officials to add a penalty rate for households owning additional property, much like the current system does. While possible, this does pose some complications when attempting to harmonise property taxation for enveloped properties. For example, it would risk making rents more expensive by taxing companies owning several properties more than under single ownership, an additional charge which would be passed on to renters. It would also require tracking the future use of such properties, unless the intention is to ‘lock in’ a property to a higher rate if it was used as a second home only for a short initial period. Current tax receipts for second properties are also very limited, which means we can abstract from these considerations when assessing the overall impact of the reform.

1.1.1 Proposed annual PPT rate schedule

Property value band	Representative property price ¹	Proposed annual PPT rate	Annual liability	SDLT transaction liability
£125,000 or less	£100,997	0.00%	£0	£0
£125,001 to £250,000	£201,803	0.2%	£154	£1,536
£250,001 to £500,000	£379,364	0.50%	£897	£8,968
£500,001 to £1,000,000	£712,649	0.75%	£3,095	£25,632
£1,000,001 to £1,500,000	£1,293,122	0.90%	£7,888	£73,062

Property value band	Representative property price ¹	Proposed annual PPT rate	Annual liability	SDLT transaction liability
£1,500,001 to £2,000,000	£1,851,376	0.95%	£13,088	£135,915
£2,000,001 to £3,000,000	£2,586,243	1.00%	£20,362	£224,099
£3,000,001 to £4,000,000	£3,702,752	1.00%	£31,528	£358,080
£4,000,001 to £5,000,000	£4,804,190	1.00%	£42,542	£490,253
£5,000,001 to £10,000,000	£7,126,492	1.10%	£67,891	£768,929
More than £10,000,000	£10,824,322	1.10%	£108,568	£1,212,669

To avoid bunching effects or retain a similar number of bands to the current stamp duty regime, we would propose introducing a range of marginal property rates that would apply to the same bands as for the previous stamp duty regime. For example, for the UK's average property price of £273,000, buyers would pay 0% on the first £125,000, 0.2% on the following £125,000, and 0.6% for the remainder. The total annual liability would be around £388 and exempt the buyer from paying £3,650 in stamp duty.

The proposed rate progression ensures higher-value properties contribute proportionally greater amounts whilst maintaining compelling conversion incentives across all segments. This broadly replicates the steepness of the current stamp duty schedule and is intended to retain its proportionality. A £370,000 family home would face a tax liability of £970 annually under the PPT regime compared to £8,500 under SDLT. Assuming an average duration of their stay in the property and a 4% discount rate to reflect a typical mortgage rate, the net present value of their full tax liability comes to under £7,900. At 11 years, the net present value of the future tax liability is identical in net present value terms.

We could therefore think of this reform as giving households the possibility of transforming their current stamp duty obligations into a prepayment of their property taxes. Households concerned about taking on a permanent future liability would therefore be able to pay stamp duty and remain assured they could remain in the property indefinitely without incurring a greater tax burden. Future governments would need to assess under what terms that possibility should be offered to households.

1.2 Implementation strategy: two viable pathways

As discussed, any immediate implementation would have serious fiscal consequences. There would be positive economic impacts from improving the functioning of the property market, but the reform would also aggravate an already precarious fiscal position. Our analysis reviews two implementation options that phase in the introduction of the reform gradually over the next ten years, and discusses how each would work in practice.

¹The mean property price for transactions within each band.

1.2.1 Phased replacement with a discount

This option would see the gradual introduction of a choice between paying full SDLT or opting for a PPT. There will be an increasing discount on current stamp duty for homebuyers in exchange for a modest permanent future annual tax on the property. This tax would be proportional to the discount offered: if the household were offered a 10% discount on stamp duty, that would mean paying only 10% of the full property tax. The size of the discount available would gradually increase over the 10 years of introduction to eventually result in a regime where the household would have the option of paying either 100% stamp duty and no PPT or no stamp duty and 100% PPT, as discussed above.

A successful roll-out of this strategy will require households to gradually adopt the discount. Because the discount is simply a scaled down version of the full policy, households should find the liquidity improving aspects of the discount desirable and choose to reduce their immediate stamp duty liability. Nevertheless, it is possible that many would choose to remain in the current system, particularly while the discount remains small in the first few years. Two observations are useful here. The first is that ensuring the drop off in revenue is not too sharp is one of the key aims of a phased introduction; relatively unenthusiastic adoption is economically costly but fiscally desirable in that context. The second is that the greater challenge with removing this tax on transactions is largely the loss of tax revenue; households that value stability and want to minimise future obligations retain the option of paying under the current system and not bind any future properties.

1.2.2 Phased replacement with gradual eligibility

Instead of offering all buyers a discount on their stamp duty in exchange for an annual property tax proportional to the size of that discount, the phased replacement with gradual eligibility would instead make this available to different bands over the same ten year period. It would first allow the lowest value bands to move to the new regime, up to around 10% of all current stamp duty revenue. A substantial share of these properties fall under the £125,000 threshold, and would not attract either charge, so this implementation would first offer the possibility of opting into either regime to properties within the £125,000 to £350,000 band. Over the next decade, it would gradually offer the same option to higher value properties. We can think of this option as converting 10% of total system revenue annually over ten years until full comprehensive coverage is achieved, maintaining a floor for the reduction in SDLT collections during the transition.

We assume that this option would be met with slightly higher adoption rates than the phased replacement with a discount, as eligible households would be able to discharge their stamp duty liabilities in full during the transition, instead of committing to a hybrid tax regime. This results in a slightly sharper decline under this option than under the phased replacement with a discount, which results in a greater decline in revenue relative to the counterfactual than that alternative. On the other hand, this greater adoption rate also results in a more positive long-run fiscal impact, again reflecting the ever-present trade-off that short-term benefits have long-term costs. The “Eligibility Schedule” table below provides a concrete example of this pathway.

It is also plausible that this phased replacement with gradual eligibility might offer more predictable revenues for fiscal planning by offering full eligibility for a small number of bands instead of partial eligibility for all bands simultaneously. This would be the case if households could be more reliably expected to opt-in to the current regime if the added complexity of managing a dual tax regime is removed.

1.3 Administration and valuation

Our proposal anchors property valuations to purchase price, which would include passive adjustments for inflation, thereby preventing the emergence of assessment disputes by leveraging actual transaction prices. This avoids issues associated with periodic reassessment controversies that have plagued traditional property tax systems.

We analysed around 18 years of HMRC transaction data to reveal consistent property value appreciation averaging 3.5% annually across all segments, with band-specific rates ranging from 3.2% for properties below £250,000 to 3.9% for properties exceeding £2 million. This rate of house price inflation exceeds observed rates of inflation before the recent period of high inflation before 2022, but there have been some signs of a recent slow-down in house prices that suggest the period of continued house price increases is unlikely to continue as before. An inflation adjustment is therefore a conservative assumption that could be revisited by future governments if above-inflation increases in house prices persist over the next few years.

Our model assumes automatic band adjustments in line with inflation. As the analysis above shows, the distribution of property prices naturally shifts upwards over time. Without this adjustment, fixed tax bands would result in stealth tax increases for most households, pushing them into higher tax brackets purely due to inflation. Automatic adjustments are therefore essential to ensure the tax system remains fair and that tax burdens do not increase in real terms over time.

Properties require revaluation exclusively at sale, ensuring tax liabilities reflect current market conditions whilst preserving administrative simplicity. This creates natural incentives for accurate initial conversion valuations whilst eliminating ongoing bureaucratic disputes about property values that create political resistance to property taxation reforms.

The schedule of eligibility based on a ten year adjustment period could be something like the below:

1.3.1 Eligibility schedule (ten year adjustment period)

Year	Eligibility threshold
2025	£350,000
2026	£425,000
2027	£550,000
2028	£700,000
2029	£875,000
2030	£1,050,000
2031	£1,400,000
2032	£2,000,000
2033	£3,300,000
2034	No limit
2035+	Universal eligibility

2 Appendix II: Additional revenue measures

Smoothing the fiscal cost over time isn't enough; given the pressing challenge of the need to find additional sources of revenue, reform of the tax system is unlikely to receive sufficient political attention unless it can contribute to relieving the burden on public finances now. We consider here two additional mechanisms for increasing tax revenue immediately. These are a combination of different approaches, ranging from eliminating loopholes to increasing the contribution of higher value properties, and include a mechanism to encourage planning permission holders to expedite the process of starting their developments. In the remainder of this section, we discuss these additional mechanisms in detail, going from the smallest increase in projected revenue to the largest.

2.1 ATED integration: eliminating corporate property tax avoidance

Property envelopment—wealthy individuals purchasing residential properties through corporate structures—represents systematic revenue avoidance under current arrangements. By trading ownership shares in the company rather than transferring the property directly, investors pay lower rates of stamp duty, significantly reducing tax liability particularly for high-value properties.

The government already imposes Annual Tax on Enveloped Dwellings (ATED)—annual charges ranging from £4,400 to £287,500 on company-owned residential properties over £500,000—specifically to discourage this practice. However, analysis by Dan Neidle shows that the existing rate structure creates substantial economic incentives for corporate ownership, with break-even periods of 17-69 years making company structures attractive despite annual tax obligations.

This stepped structure proves increasingly inadequate as property values rise, creating artificial incentives for complex ownership arrangements that avoid appropriate tax contributions while retaining administrative complexity and revenue leakage.

Our reform proposal would extend progressive PPT rates to the approximately 7,000 corporate-owned properties currently subject to ATED, ensuring equivalent taxation burdens regardless of ownership structure. For example, a £5 million corporate-owned property transitions from a fixed £48,500 ATED charge to a progressive PPT liability generating approximately £44,500 annually. This small reduction maintains revenue collection while harmonising the tax treatment and eliminating artificial ownership incentives.

By extending our proposal for proportional property taxation to ATED properties, we would eliminate any distortions arising from differential tax treatment of enveloped properties and ensure these were taxed equally on the basis of their value rather than on the basis of the corporate status of their ownership structures. Harmonising these would also leverage existing ATED administrative infrastructure, including established property registers, valuation procedures, and proven collection mechanisms operated by HMRC. This administrative continuity would reduce implementation complexity while extending progressive taxation principles to corporate property holdings that currently exploit structural tax advantages.

Revenue projections indicate £0.48 billion in initial annual collections, a substantial increase on the current £111 million ATED baseline while creating natural incentives for properties to be de-enveloped where this is the result of tax optimisation. Importantly, because many properties in this regime already avoided stamp duty payments and were already subjected to current ATED rates, these rates should be levied immediately and without the need for any adjustment period—eligible properties would be liable from the point of implementation.

2.2 Annual additional rate: targeting high-value properties

A final addition to the reform proposals would be an additional 0.5% tax rate applied to the portion of values above £2m. This proposal would both contribute to addressing the immediate fiscal costs of the transition away from stamp duty while also introducing a tax on luxury residential assets. According to our modelling of the distribution of properties, approximately 165,000 properties in England and Northern Ireland would meet the £2m threshold, representing less than 1% of the total housing stock, but a very substantial share of total residential wealth.

This contribution would apply marginal taxation principles, charging 0.5% annually only on value above the £2 million threshold. This progressive structure ensures properties at the boundary face minimal additional burden whilst luxury properties would make a larger contribution to public revenue. A £3 million property would incur an additional tax liability of £5,000 annually on the £1 million excess—a modest burden relative to property value which would generate significant aggregate revenue.

Our figures project that this measure would raise £1.46 billion in annual collections from non-enveloped properties, based on £292 billion in total property value above this threshold. When combined with the £0.26 billion from enveloped properties subject to ATED, the total Enhanced Property Contribution yields £1.72 billion in the first year. These projections assume a high degree of compliance, comparable to council tax performance.

This annual additional rate would operate independently of the proposed PPT adoption mechanism, providing a source of revenue stability during the transition period regardless of the pattern of voluntary conversions. Properties subject to the contribution would be eligible for identical incentives for PPT conversion.

2.3 Overall policy framework and fiscal impact

Our proposal would combine the overhaul of the stamp duty regime with additional revenue measures that could smooth the impact of shifting away from a front-loaded transactions tax. It is unlikely that either element of this reform package could be implemented independently: without the additional revenue from a progressive schedule and the immediate taxation of high-value assets, a transition towards a property taxation regime would leave a large fiscal gap; without reforming of an economically damaging tax, it is unlikely that the public would accept a tax increase on residential assets. In conjunction with the voluntary element for the main tax reform, this proposal minimises the risk of pushback from the public for their next transaction.

The overall package is structured in order to ensure tax revenue from stamp duty is matched by the combination of the reforms proposed here. Those are broken down as follows:

- In the first year, revenue from the new progressive property tax, combined with the remaining stamp duty receipts during the transition, is projected to be just over £10.3bn. This decline from the £10.8bn baseline reflects the gradual shift as new buyers opt into the new system.
- Reforming ATED bands to implement the same proportional rates that apply to unenveloped property, effective immediately, raises a further £0.48bn in the first year. This is a conservative estimate based on current exemptions to stamp-duty: enveloped properties below £500k don't pay either, and those above that value pay a nominal amount of transaction tax that does not reflect the bands that apply to unenveloped residential properties.
- Finally, our estimates suggest that significant additional revenue will be captured through the

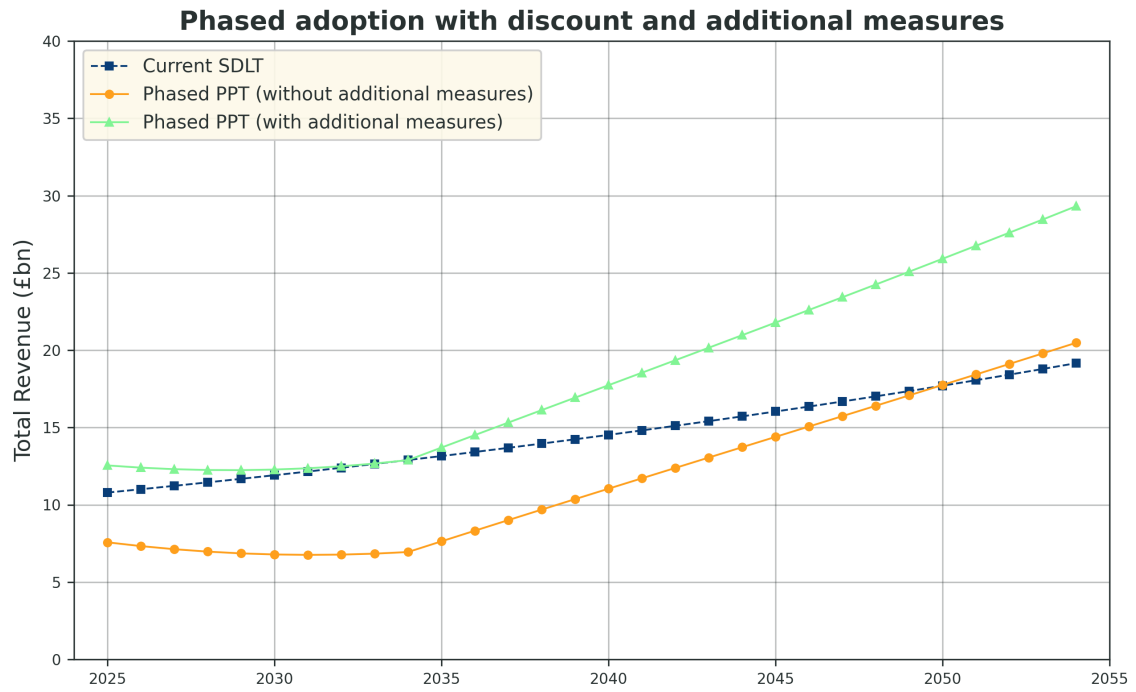
immediate implementation of an annual additional rate of 0.5% on property values in excess of £2m. This is projected to raise £1.72bn in the first year (including £1.46bn from non-enveloped properties and £0.26bn from ATED properties), rising to nearly £2.6bn annually by 2054. For every additional £1,000 of home value above the threshold, owners would be required to pay an additional £5 every year. Households with reduced liquidity or on low incomes would be able to delay this burden to the point of sale of the property.

The combination of all these elements would result in a significant long-term simplification of property taxes in the UK, and also enable the government to secure a more stable source of tax revenue.

In the short-term, the transition would raise total revenue from property taxation to £12.5bn in the first year, growing steadily from that point. Unlike the volatile current system, the new regime ensures that revenue does not decline, with the additional measures more than compensating for the initial reduction in transaction tax receipts.

Over time, this reform generates considerably higher levels of tax revenue than the current property taxation regime. Projecting revenue from the current tax system, we can expect it to grow to around £19.2bn² by 2054. By contrast, revenue from our proposal would grow significantly more, reaching over £29.3bn in the same year. This is driven both by the extra revenue measures and the more robust nature of an annual property tax. In the subsequent section we cover the process of generating these projections in greater detail.

²The figures presented in these graphs are lower than actually observed tax revenue. This is because we fit a model of the UK's house price distribution to the data and use that to generate both forecasts of the current regime and projections for our reforms. This ensures the numbers are based on the same underlying universe of properties, and because both underestimate revenue from property taxation, the relationship between them should be preserved with a more realistic model of the house price distribution.



Source: Centre for British Progress Analysis

Figure 1: Phased adoption with discount and additional measures

3 Appendix III: Fiscal projections methodology

3.1 Framework and data

As discussed in the main text, the transition away from stamp duty is especially challenging when public finances are under more strain than at any point over the last decade. The succession of adverse fiscal shocks from a pandemic and energy prices has amplified a worrying trinity of high inflation, low growth, and high debt levels. While most commentators recognise that immediately replacing stamp duty with other ways of taxing property would represent a significant improvement over the status quo, this may be infeasible as fiscal pressures mount.

However, the pressing nature of the problem may offer an unusual opportunity to combine this reform with a set of measures designed to increase revenue from property taxation straight away, as described in the main text. In this annex, we review the approach followed to model the implementation of these reforms.

3.2 Modelling the price distribution

The first step in the process is to establish a defensible baseline for projecting stamp duty revenue over the next 30 years. As seen in a previous section, this revenue is extremely volatile, with HMRC data suggesting a growth rate of around 1.1% from 2006 to 2024. A more even distribution of the revenue generated during that period would imply a growth rate slightly higher than 2%. Based on these figures, we assume that revenue will grow in line with the consumer price level at a long-term rate of 2% annually.

In order to generate estimates for an entirely different tax regime, we need to construct a measure of the distribution of prices for all the residential properties in the UK, and derive a measure of the number of expected transactions based on this estimated distribution. This step is necessary to ensure that we can compare different tax regimes using the same underlying population, rather than naïvely projecting forward last year’s revenue. We estimate this based on the transaction bands data made available by HMRC through its UK Stamp Tax Statistics publication by fitting a mixed-distribution model that is log-normal up to a threshold (approximately the average property price) and Pareto at the higher end.

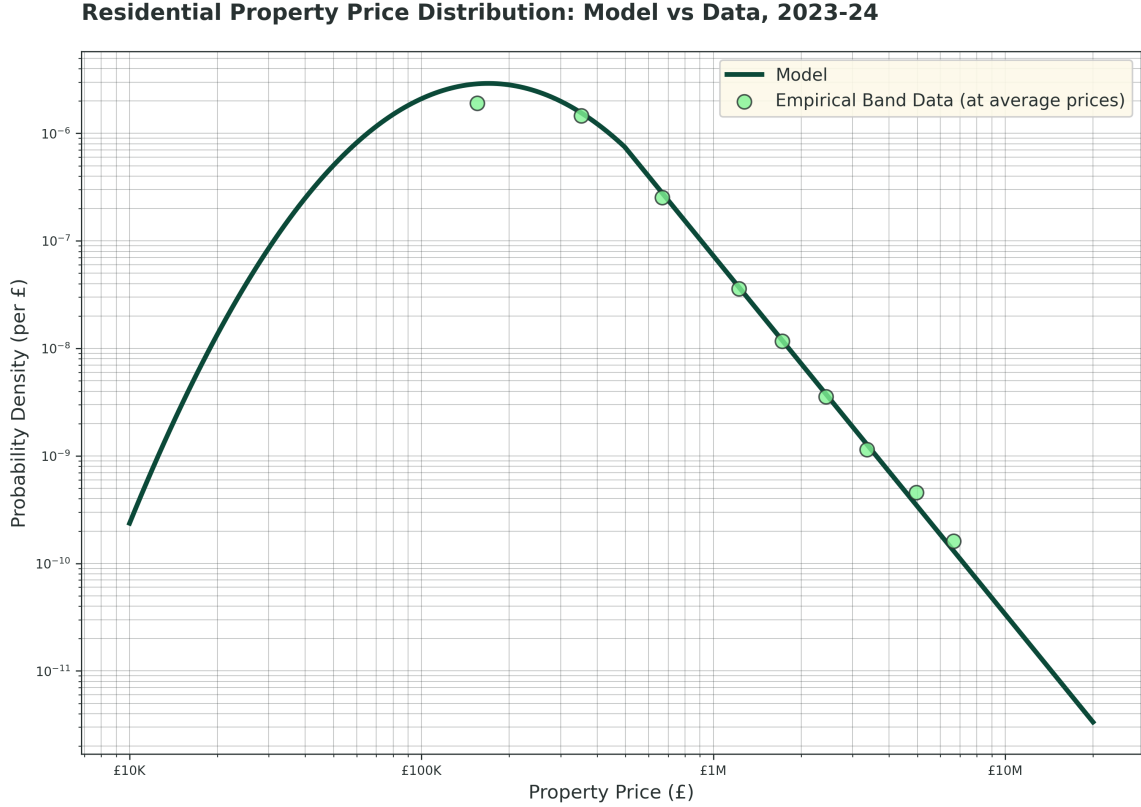
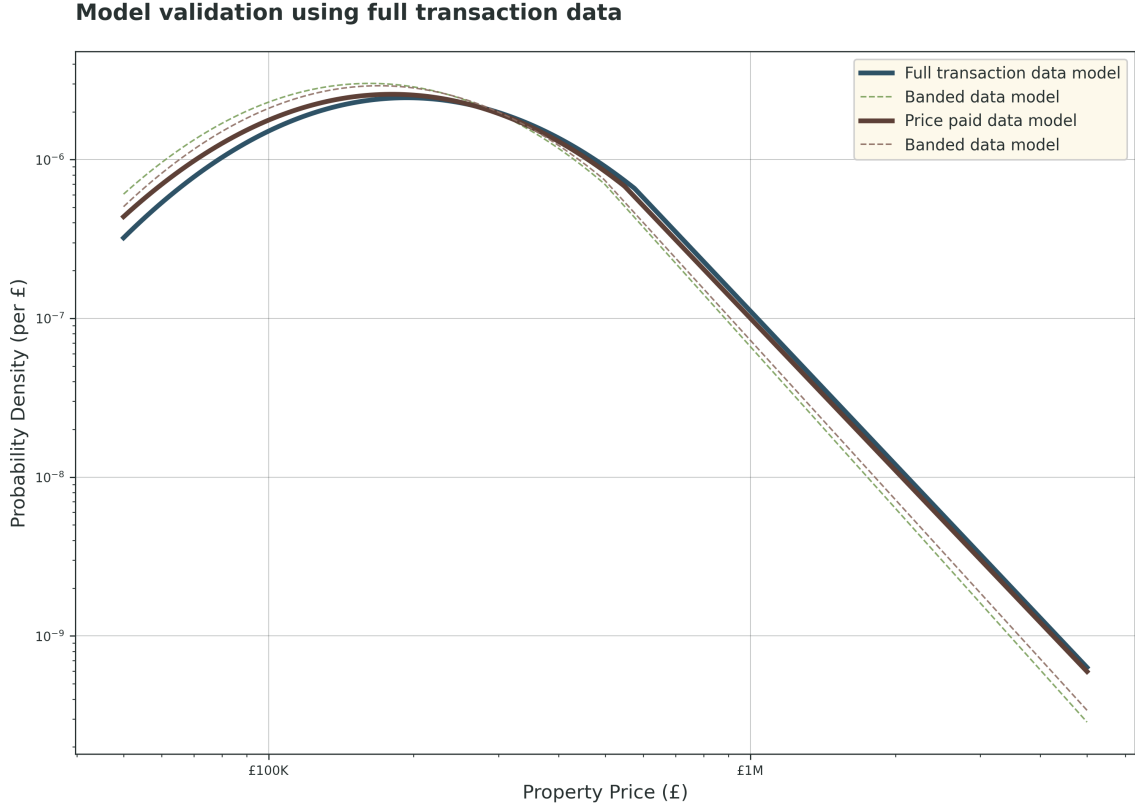


Figure 2: Residential property price distribution: model vs data, 2023-24

This mixed distribution model captures many important features of the data, particularly the higher density at lower prices, which implies that lots of properties trade for very low values. For higher end properties, the density doesn't decline as quickly as might be expected from a log-normal distribution, resulting in many more properties around £1m than might otherwise be expected.

Despite the model's reasonable performance at capturing some of these features, it underestimates the prevalence of ultra high-value properties over £5m, which results in slightly lower than expected revenue for the baseline revenue projection scenario. Because this feature affects all forecasts equally (as it is based on the underlying price distribution), it does not affect comparisons across counterfactuals. To address this systematic underestimation in high-value bands, we apply empirically-derived corrections based on validation against 18 years of HMRC transaction data, which revealed the model consistently undercounts properties above £5M. We apply conservative adjustment factors to reduce these errors to approximately 10%.

We validate the simpler banded version of the model using individual transactions data from two different sources, including the Land Registry's Price Paid data; the banded model performs well despite having considerably less information on the overall density of properties at each price point, as can be seen in the plot below for the two sources.



Source: HMRC UK Stamp Tax Statistics; HM Land Registry; Centre for British Progress Analysis

Figure 3: Model Validation with Transaction Data from Multiple Sources

Using this model, we can project forward revenue under the current stamp duty regime by assuming a uniform transaction rate based on the existing ratio of transactions to total properties in England and Northern Ireland. We then calculate the effective tax rates for each of these bands, and project those forward while updating property prices with the rate of inflation, for both non-residential and residential properties. This forecast forms the baseline against which we assess any policy counterfactuals. Because the estimated density of properties slightly undercounts the total number at higher price bands, this results in a lower projected revenue than observed with 2025 data. However, as mentioned above, this underprojection affects all scenarios equally, so any comparisons are unaffected.

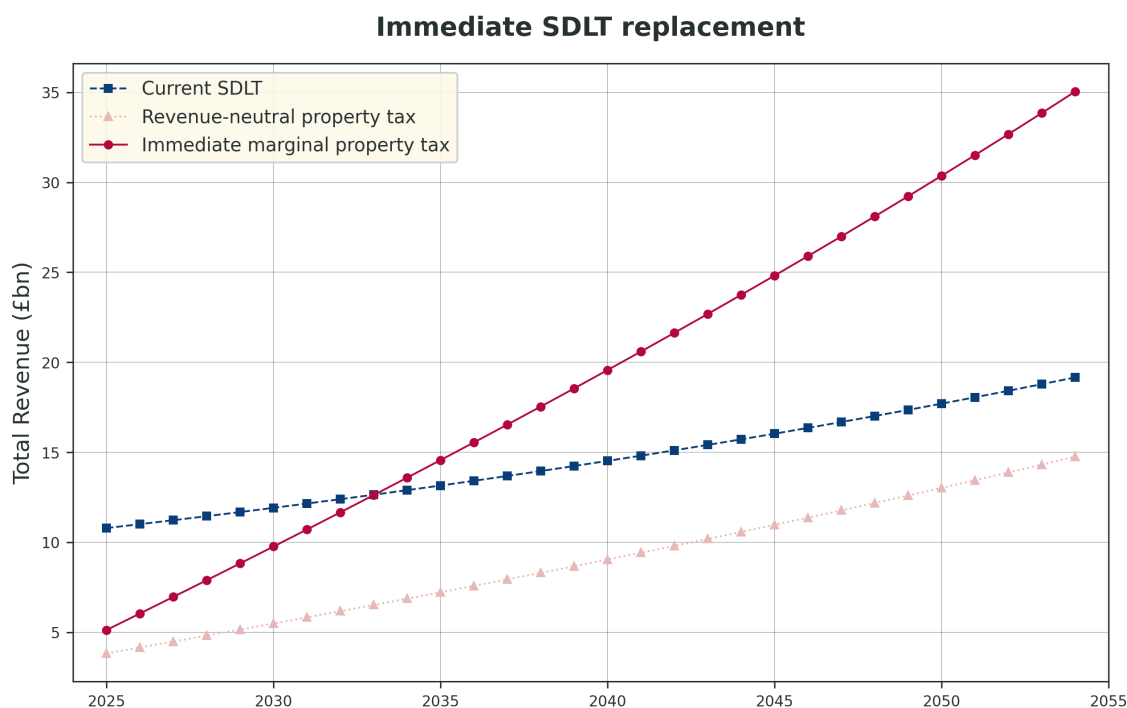
3.3 Baseline revenue projections and immediate replacement

SDLT currently generates £11.6 billion annually, split between £8.6 billion from residential transactions and £3.0 billion from nonresidential sales. Using our model for the distribution of prices, we replicate a figure of around £10.8bn for 2025, which is the starting point for our analysis.³ Using an estimate of CPI increases of 2% annually, we project that this would increase to £19.2bn by

³All revenue projections in this document are based on a fitted model of the UK's house price distribution. This ensures that all scenarios (the current system and our proposed reforms) are compared using the same underlying universe of properties. The model slightly underestimates revenue from high-value properties, resulting in a baseline projection for 2025 that is lower than the observed figure. Because this underestimation affects all scenarios equally, the relative difference between them remains accurate.

2054. It is notable that nominal SDLT revenue has grown at a lower rate of 1.1%, but the volatility in the measure hides additional tax throughout the period that was not evenly distributed above and below the trend. Distributing this more evenly produces a growth rate slightly above 2% on an annual basis, justifying the choice to adjust revenue using a CPI growth figure of that magnitude.

Immediate implementation of a proportional property tax would result in an immediate drop in tax revenue, with only properties transitioning to the new regime generating a small amount of tax income from the start. The figure below illustrates the transition path of two different scenarios, one in which we implement a tax regime that replicates tax neutrality under full adoption, and one with a steeper tax rate that replicates the progressivity of the current stamp duty schedule.



Source: Centre for British Progress Analysis

Figure 4: Immediate implementation reform scenarios

If replaced immediately, a simple proportional rate produces only £3.8bn in revenue in its first year, while the more progressive schedule generates around £5.1bn. This represents an immediate revenue shortfall of over 50% against current tax revenue, and this fiscal gap presents the single greatest barrier to reform of the tax to date. The two scenarios analysed show how it would be trivially possible to replace the tax with an alternative that generates a long-term increase in revenue from property taxation, but they also make it clear that the path towards neutrality against the existing regime would exceed the duration of any single parliament. This makes ambitious reforms at best optimistic if the fiscal space to introduce them is available, but almost complete non-starters when bond markets are starting to send signals of discomfort.

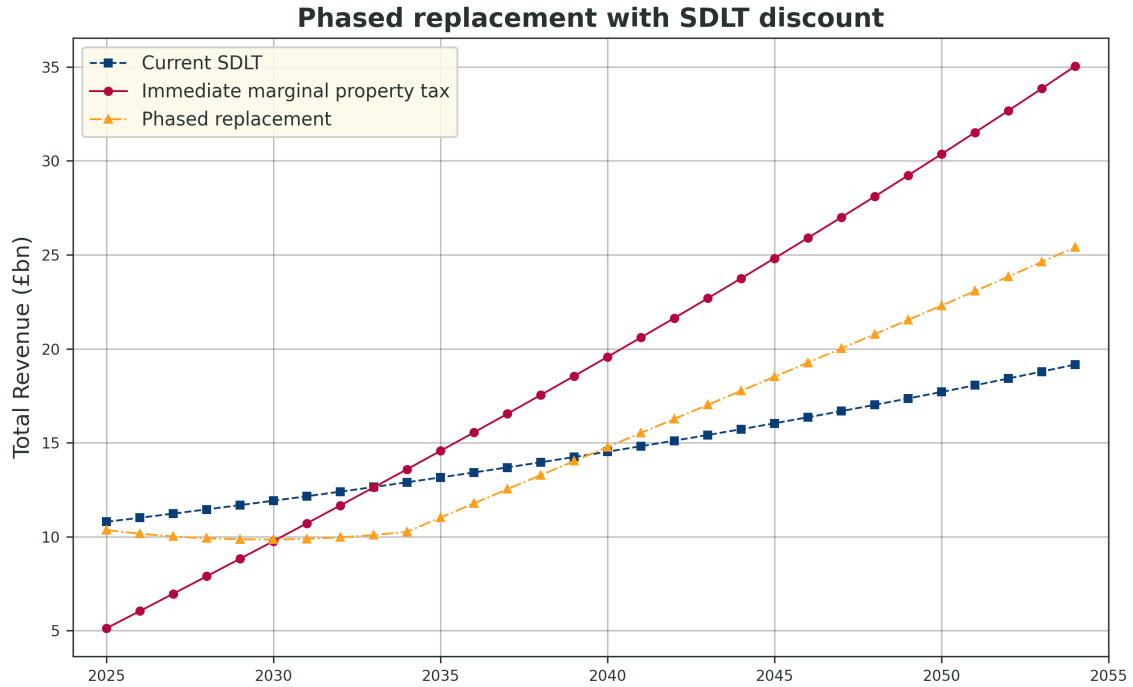
It is worth highlighting just how much of a missed opportunity this may represent when considering the long-term potential of these reforms. By choosing the more progressive schedule, revenue from a new property tax would reach £35.0bn by 2054. Compared to the projected baseline of £19.2bn,

this would add nearly £16bn of extra revenue in nominal terms. Despite these evident advantages, because stamp duty aggressively front-loads revenue from a particular property by concentrating it at the point of sale, it creates a time profile that immediate replacement cannot offset.

3.4 Phased replacement implementation

An obvious alternative is to consider what would happen if we were to gradually phase in the tax reform to mitigate the aggressive loss of revenue over the first few years. By delaying implementation over several periods, it might be possible to track the “loss” of revenue relative to the current tax and ensure revenue stability. We implement a version of this over a ten year period for the phase out. This choice is relatively arbitrary: five years or twenty years could just as easily make the same point, but there are a few reasons why either alternative would be less useful to explore.

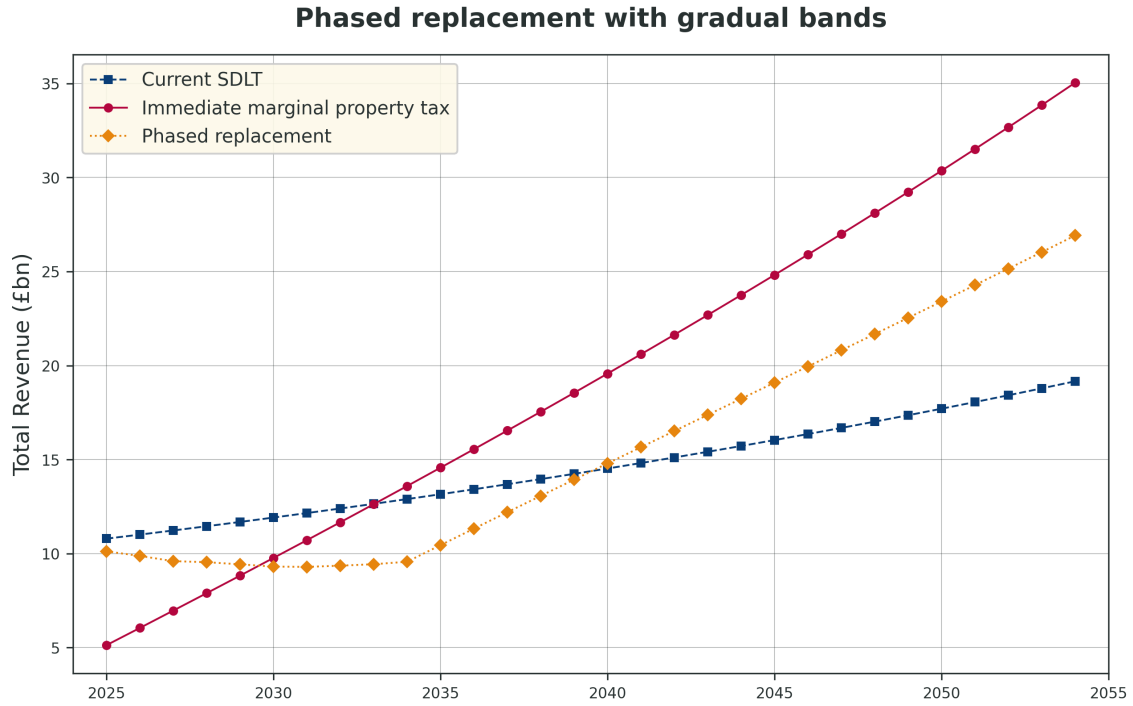
In practice, a five year transition period would prove far too short: revenue would collapse too quickly and take a long time to recover, making it very quickly converge to the scenario with an immediate transition. While this might be appealing to the government implementing the reform, it would risk exposing future governments to a considerable loss of revenue that they could try to reverse. Non-elected officials at the Treasury concerned with public finances beyond the horizon of a given parliament would also likely question the wisdom of creating a considerable shortfall in public revenue at the start of the tenure of a future government. Absent the fiscal space, there is very little reason why this would be an improvement over a longer transition period. On the other hand, a twenty year period would imply a very protracted transition, which also means that any potential benefits from tax reform would be aggressively discounted. That is to say, potential future benefits would not be worth very much in net present value terms, and a protracted adoption process would risk attracting very few buyers in making the transition.



Source: Centre for British Progress Analysis

Figure 5: Phased implementation scenarios with gradual adoption

We examine two different approaches to phasing in this tax, which are represented in the two plots above: a “phased replacement with a discount” and a “phased replacement with gradual eligibility”. The main difference between these is that under the discount-based approach, buyers at all price bands can opt to convert a fraction of their stamp duty liability into a proportional tax. This “discount” in their up front liability is converted into a small long-term commitment, with the amount of available discount increasing every year by 10% until reaching 100% in the final year. Under the gradual eligibility approach, we instead explore the possibility of enabling all households within a certain band to move into the proportional regime immediately. To ensure comparability, we create 10 bands that gradually become eligible during the transition period.

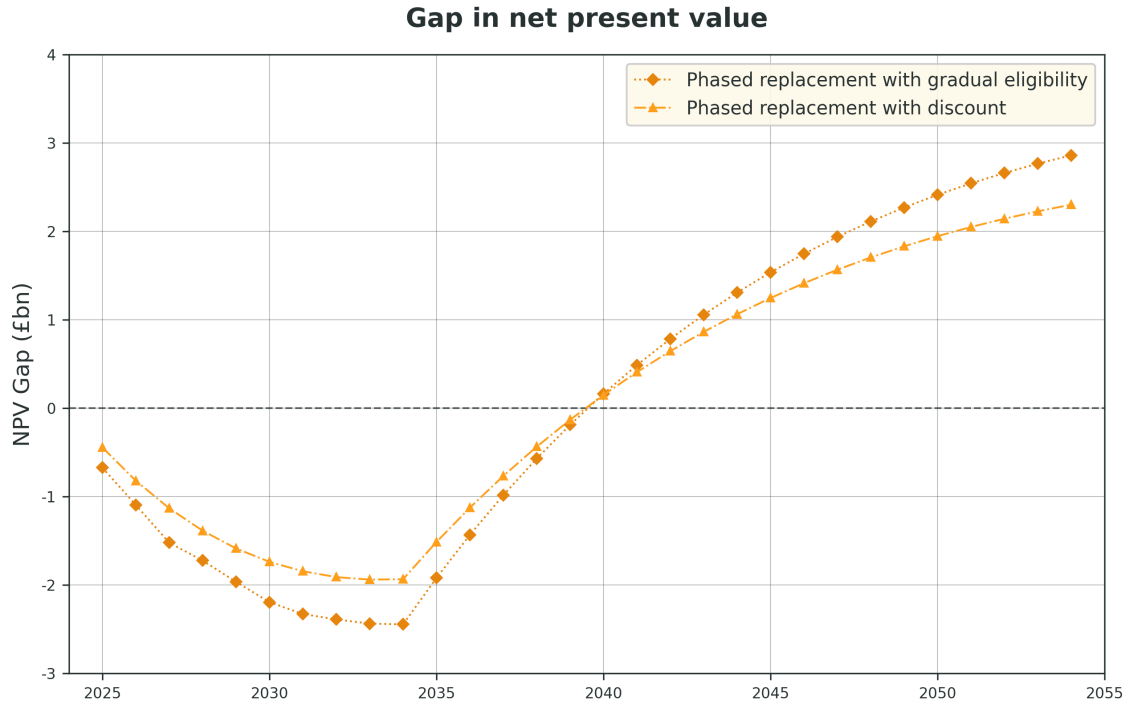


Source: Centre for British Progress Analysis

Figure 6: Gradual implementation scenarios comparison

The results can be seen in the two graphs above. We assume that under a phased implementation where each buyer is only offered a discount on their stamp duty, the adoption rate is reduced relative to one in which they can choose which regime applies to them. Because only a fraction of all potential stamp duty revenue can be converted into a proportional tax every year, the decline in revenue is less sharp. On the other hand, the increase in revenue over the longer-term is also assumed to take longer because fewer people transition when only a fraction of their stamp duty liability can be discounted.

The graph below shows the Net Present Value (NPV) of the difference in revenue streams between the reform scenarios and the baseline, illustrating the long-term fiscal impact of each implementation pathway.



Source: Centre for British Progress Analysis

Figure 7: NPV gaps for phased reform scenarios without measures

3.5 Additional measures

However, even that may not be enough. Given the projected gap in revenue required to meet the government’s fiscal rules, it is clear that tax reform is currently a “costly” proposition because it would require significant attention and energy from officials throughout government that would otherwise be focused on identifying sources of tax revenue.

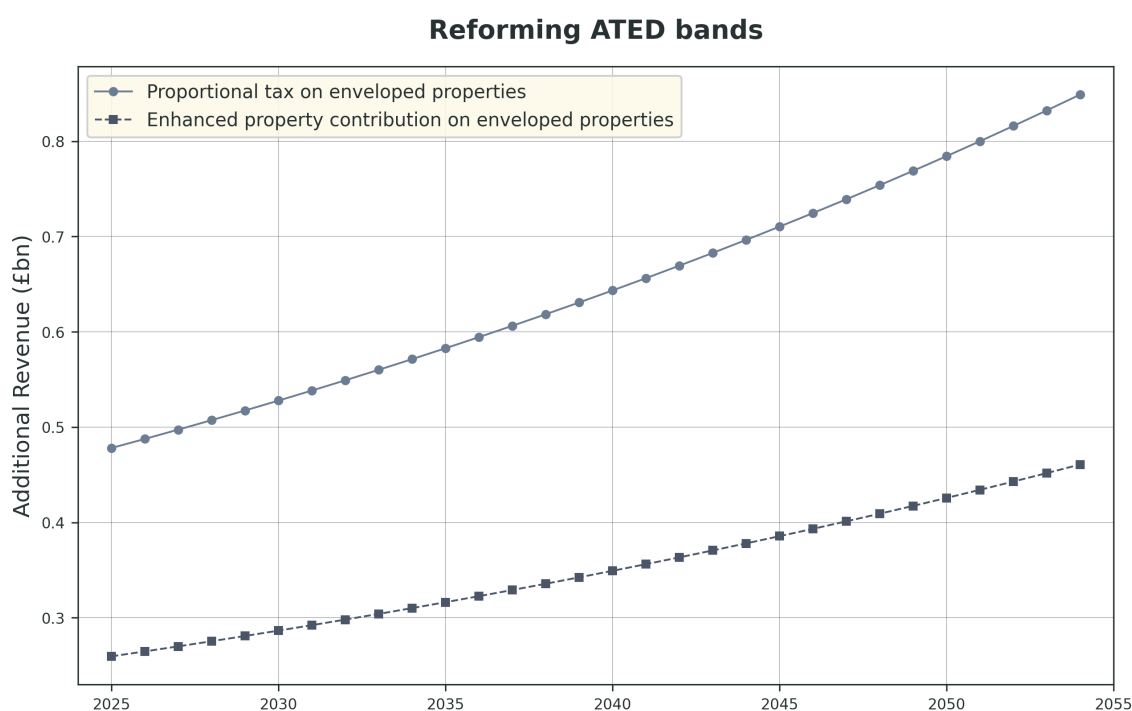
With that in mind, our proposal builds on this phased implementation of the policy and includes separate tax reforms that aim to increase revenue against the projected revenue from the current system right from the start. There are three separate revenue raising measures we recommend for immediate implementation, which would likely result in a considerable improvement in the government’s immediate fiscal position. Because of the phased approach to the replacement of stamp duty, combining these measures with longer-term improvements to the country’s fiscal position through other tax reforms and rationalisation of spending priorities will maximise the economic impact of the measures we propose.

3.5.1 Reforming ATED bands

The UK has approximately 204,000 corporate-owned residential properties. The Annual Tax on Enveloped Dwellings (ATED) was designed to deter tax avoidance, but its high value threshold (£500,000) and various reliefs mean that only a small subset (~7,000) are actually subject to the charge. This regime generates just £111 million annually, leaving the vast majority of enveloped properties untaxed.

Our reform replaces this ineffective system. We propose applying the new Progressive Property Tax schedule to all 204,000 enveloped properties, eliminating the £500,000 ATED threshold and replacing the fixed charges for those currently paying with the PPT's banded rates.

In practice, this would simply harmonise the ATED regime with the existing main regime, folding that exception regime into the current one. Under our regime, residential properties would be liable for tax regardless of transaction regime or ownership structure, and so the owner of the legal title of the property in the Land Registry would always be liable for tax payments to HMRC. The economic incidence of these taxes might then be split between legal and beneficial owners, but that differentiation would not be administratively relevant unless HMT decided to impose a surcharge for non-domiciled beneficial owners. To avoid that complication and simplify the process, it may choose to implement any such surcharge on the basis of where the legal owner is domiciled and registered.



Source: Centre for British Progress Analysis

Figure 8: ATED reform revenue projections

By folding ATED bands into the main property taxation regime we propose, we estimate that there would be £0.48bn of additional revenue from this source in the first year, rising to £0.85bn by 2054. The enhanced property contribution would also apply immediately to properties currently in this regime, contributing to the overall revenue from day one.

Because many of the properties under this regime have not paid stamp duty and they are already required to pay ATED rates, we assume they would be incorporated into the proportional tax regime and become liable for the new tax immediately. This may pose some issues for legal owners that may lack the liquidity to meet these new requirements, which may require HMT to enable

owners to defer payment at a pre-specified interest rate until the property is sold, at which point the accrued tax liability would be settled.

Applying progressive property tax rates to these properties will more than quadruple the current receipts from the outset. This reform effectively eliminates artificial incentives for corporate property ownership while leveraging the existing administrative infrastructure for collecting these fees. Unlike the main progressive property tax, ATED integration faces no adoption uncertainty: it would automatically apply to existing corporate holdings.

3.5.2 Enhanced property contribution

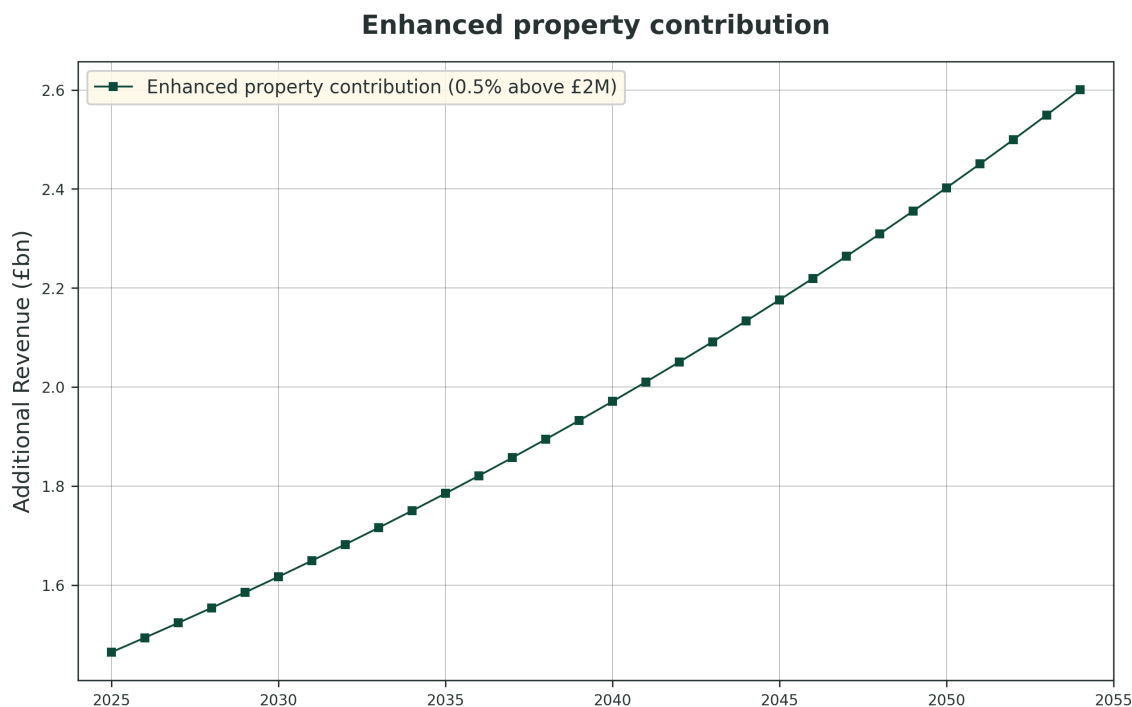
Reforming ATED bands to tax enveloped properties proportionally along with non-enveloped property would provide meaningful amounts of revenue but likely fall short of what the current stamp duty regime would generate. To make up this gap, and ensure wealth accumulation through property values are fairly taxed, we propose the immediate introduction of an enhanced contribution that would be capped at a 0.5% marginal rate for property values above £2m.

Upon implementation, all property values above £2m, adjusted for inflation, would be required to pay the enhanced marginal rate of 0.5% regardless of whether they have transitioned to the new proportional property tax regime. This additional source of revenue would ensure that tax receipts would not fall relative to the existing stamp duty regime, and would apply regardless of enveloping status.

The revenue gap from the main phased transition is projected to be around £2.6bn in nominal terms at its widest point. This enhanced property tax, along with the reform of ATED bands, is designed to offset this shortfall. By 2035, the full reform package is projected to deliver a surplus.

Beyond enveloped properties, this includes all other residential ownership structures—primary residences, second homes, and investment properties held individually or through trusts—preventing tax arbitrage through ownership restructuring. As previously established, valuations would be anchored to the purchase price at the point of sale to ensure administrative simplicity. According to our modelling, this affects approximately 165,000 properties representing less than 1% of housing stock but capturing disproportionate residential wealth concentration.

A £2.1 million property would pay £500 annually on the excess value, while a £5 million property would contribute £15,000. These burdens relative to property values generate substantial aggregate revenue, which applies immediately and, including the contribution from enveloped properties, is projected to rise to over £3bn by 2054.



Source: Centre for British Progress Analysis

Figure 9: Enhanced property contribution revenue projections

The enhanced contribution operates cumulatively with the base proportional property tax rates and applicable surcharges for non-residents or second homes, leveraging existing administrative infrastructure for comprehensive high-value asset taxation. For households facing liquidity constraints, deferral provisions would accommodate payment postponement with accumulated liability plus interest settled upon property sale or transfer. These arrangements prevent forced sales whilst ensuring eventual collection, addressing concerns about asset-rich but income-poor owners. Terms would mirror existing council tax deferral schemes with appropriate safeguards and interest rates.

3.6 Summary of fiscal projections

Our analysis indicates that a phased implementation based on a partial conversion offer (the discount-based pathway) is the most realistic reform pathway. However, without supplementary measures, this approach would still create a significant revenue gap during the transition. In its first year, we project it would generate £10.34 billion, resulting in an initial shortfall of £0.45 billion against the £10.8 billion baseline. The shortfall would widen over time, reaching a peak of £2.64 billion in 2034 before beginning to narrow as adoption increases.

To ensure fiscal stability and make the reform viable from day one, two supplementary mechanisms are required: the immediate reform of the ATED regime and the immediate introduction of an Enhanced Property Contribution—a 0.5% levy on property values exceeding £2 million. These measures provide a reliable revenue floor during the transition period.

The comprehensive reform package, combining the main reform with these additional measures, is fiscally sound and ensures revenue stability:

- **Immediate impact:** The full package is projected to raise £12.5 billion in its first year, representing a surplus of £1.7 billion above the £10.8 billion baseline.
- **Long-term impact:** Over the long-term, the reform would considerably increase property revenue. It is projected to reach £21.8 billion by 2045 (a 36% increase over the baseline) and £29.3 billion by 2054 (a 53% increase over the baseline).

This analysis suggests the proposed package provides the optimal balance between feasibility and revenue performance. It addresses the critical short-term fiscal constraints while fundamentally enhancing the state's long-term fiscal capacity through a stable, growing revenue stream that scales with national property wealth.

4 Appendix IV: reliefs and exemptions

The current Stamp Duty Land Tax system is modified by a wide range of reliefs and exemptions. The very existence of such a lengthy and diverse list is, in itself, an implicit recognition of the significant economic inefficiencies caused by a tax on property transactions. Many of these reliefs are not subsidies for desirable activities, but rather necessary fixes to prevent the tax from penalising necessary beneficial economic activity like business restructuring, housing development, and labour mobility. The main categories of relief, as outlined in official guidance from HM Revenue and Customs (HMRC), are discussed in detail below.

Our proposal for a universal property tax requires an assessment of existing SDLT exemptions to determine their relevance in the new system. These reliefs can be divided into two main categories based on their core purpose. The first group consists of structural reliefs, which are technical fixes for the problems intrinsic to a transactions tax. The second group, which we might call social and economic policy reliefs, are deliberate subsidies designed to support specific government objectives. This distinction explains how those in the first category become obsolete under our proposal, while those in the second remain a matter of policy choice for the government, with associated revenue implications.

4.1 Type 1: Structural reliefs

These exemptions are technical fixes for the inefficiencies of a transactions tax, designed to prevent issues like double-charging or reduced market mobility. Because our proposed annual property tax eliminates these transactional problems by design, this entire category of reliefs becomes redundant and would be abolished.

4.1.1 Building companies buying an individual's home

The goal of this exemption is to de-risk the process of purchasing a new-build property from developers, by preventing double taxation when there is an exchange of properties involved. This can occur when a builder ensures a buyer's current property will itself have a guaranteed buyer, which reduces the risk for anyone trying to buy a new-build. This exemption is itself evidence for the inefficiency of stamp duty, and our proposal effectively mitigates these risks by design. There would be very little reason to retain this exemption upon transition to a full property tax regime.

4.1.2 Employers buying an employee's house

Once more, the rationale behind this exemption is to limit the damage done by stamp duty by preventing necessary reallocations for work reasons by exempting employers from needing to pay the tax when they purchase a property for an employee. As with the previous two examples, the exemption arises solely in recognition of the punitive impact of the tax on mobility, and it is automatically mitigated by our proposal. There would be no need to retain this particular exemption once the system had migrated to a full proportional property tax.

4.1.3 Local councils making compulsory purchases

This exemption is another example of the costly impact of a transactions tax on necessary economic activity: transactions of this nature often involve a chain of transactions between multiple parties, such as the council and a developer. As a result, it becomes necessary to introduce exemptions so that the first purchase in this chain is exempted. A proportional property tax would mitigate this

problem by design, with the government being able to retain the exemption during the transition period.

4.1.4 Property developers providing amenities to communities

Similarly, a double charge may emerge when property developers purchase land to build amenities for local communities that will be returned to the council as part of their planning application. Because the taxation results from a chain of transfers, that warrants a relief or exemption for associated transactions. Once more, a proportional tax handles that by design because it does not attract multiple tax liabilities depending on the number of transfers. During the transition period, the government could opt to maintain this exemption.

4.1.5 Companies transferring property to another company

This exemption, known as ‘group relief’, exists to facilitate internal corporate reorganizations where the ultimate ownership of the property does not change. A transactions tax penalises these necessary business activities. Under a proportional property tax, the annual tax liability is based on ownership, not transfers. An internal transfer would simply shift the liability from one entity to another within the same group. As the underlying problem of taxing transactions is removed automatically through our design, this exemption would become redundant.

4.1.6 Property Investment Funds

The current SDLT exemption for Property Authorised Investment Funds (PAIFs) and Co-ownership Authorised Contractual Schemes (CoACSs) is a technical solution designed to ensure tax neutrality. It prevents a transactions tax from unfairly penalising investment funds, which must actively trade properties to manage their portfolios. Without this relief, the tax cost of frequent transactions would make collective investment in property far less efficient than direct ownership and break the principle of neutrality. Our proposal for an annual tax on ownership, however, eliminates this transactional penalty by design, making the rationale for this specific exemption obsolete.

Under our system, liability is determined by a simple, universal principle: the entity registered as the legal owner in the Land Registry, whether holding a freehold or leasehold, is responsible for the tax. Consequently, the fund itself, as the legal owner of the properties in its portfolio, would be directly liable for the annual tax. This tax would simply be treated as a standard operating cost for the fund before any profits are distributed to investors, requiring no special exemption within the property tax framework itself.

4.2 Type 2: Social and economic policy reliefs

These exemptions are deliberate policy choices that use the tax system as a subsidy to support specific social or economic goals, such as helping charities or first-time buyers. If the underlying policy goals remain, a government could choose to retain these exemptions under the new regime, such as a full or partial exemption from the annual tax, or the introduction of a different threshold.

4.2.1 First-time buyers

The rationale for this relief is that first-time buyers would typically have greater difficulty securing enough savings to cover both a large initial deposit along with the tax liability associated with stamp duty. This problem is not a feature of our design, and the exemption may be retained

during the transition period. However, it is possible for the government to retain a discount for first-time properties by marginally increasing rates across the distribution while retaining a zero-rating below a threshold for first-time buyers. We did not model this potential exemption in our proposal, but introducing this without increasing rates for other payers would represent a reduction in tax revenue collected through the tax.

4.2.2 Charities buying for charitable purposes

Unlike other examples, the rationale for this exemption is to ensure that a charity's funds are used for its public benefit objectives rather than being diverted to pay tax. In practice, this is a deliberate subsidy for the third sector. A move to an annual property tax would impose a new, ongoing cost on charities. It is likely that the government would choose to retain this exemption, making properties owned and used by charities for charitable purposes exempt from the annual property tax. Our modelling attempts to replicate the current effective tax rate structure of stamp duty, so in some sense this exemption is already "priced in". However, relative to a counterfactual where this is not retained in a property tax regime, re-introducing it would result in lower revenue.

4.2.3 Right to Buy properties

This relief is designed to support the policy of enabling social housing tenants to buy their homes by reducing the upfront transaction cost. The SDLT is calculated on the discounted price, not the market value. Under a proportional property tax, this transactional relief becomes obsolete, but the government may choose to retain the tax support by charging a proportional property tax on the value paid by the buyers. This would result in lower tax revenue per unit of market value for the affected properties, and therefore result in lower revenue against the relevant counterfactual.

4.2.4 Registered providers of social housing

Much like the exemption for charities, this relief serves a clear goal of reducing the costs for housing associations and other providers to acquire and develop affordable housing. Imposing an annual property tax on social housing stock would introduce a major new operating cost, which would either increase rents or reduce the funds available for building and maintaining homes. Because this could run counter to the government's housing objectives, it could choose to reintroduce an exemption to property taxation for these providers.

4.2.5 Crown employees

This is a highly specific relief designed to prevent Crown employees serving overseas from being unfairly penalized by SDLT surcharges, such as the non-resident surcharge. It corrects an anomaly created by the specific design of the current SDLT system. If a surcharge on second properties is retained under a proportional property tax regime, the government may choose to retain this exemption to ensure these workers aren't penalised due to their professional circumstances.

5 Appendix V: Search and matching model of the housing market with transaction taxes

5.1 Building blocks

To accurately assess different property taxes, we use a model designed to capture how the UK housing market actually works. A key feature of the market is **search friction**: it takes time and effort for buyers to find the right property and for sellers to find a suitable buyer. Our analysis is based on a framework developed by Gabrovski & Ortego-Martí (2018), which is specifically built to handle these complexities.

We chose this particular model because it successfully replicates several real-world features of the housing market that simpler models often miss:

1. **Market Dynamics**: House prices tend to be high when sales are frequent and many properties are for sale, but low when it takes a long time to sell a home.
2. **Buyer and Seller Behaviour**: When more homes are listed for sale, more buyers tend to enter the market. Most standard models fail to capture this crucial positive relationship.
3. **Volatility**: The level of market activity (the number of sales and listings) fluctuates far more dramatically than house prices do.

To explain these facts, the model must allow the number of both buyers and sellers to change based on market conditions. This “double entry” mechanism is the model’s core strength, making it a robust tool for testing how tax policy changes affect market behaviour.

The model combines four key components to simulate this environment:

- A **matching function**, which simulates the process of how buyers and sellers find each other.
- **Value functions**, which calculate the long-term financial benefit of being a buyer, holding a vacant property, or being a homeowner.
- A **bargaining process**, which models how the final sale price is negotiated and, crucially, how taxes influence that negotiation.
- **Free-entry conditions**, which ensure that the number of buyers and sellers adjusts until the benefit of entering the market is balanced by the costs, reflecting a realistic market equilibrium.

For transparency, the underlying equations and notation (such as k for construction costs and θ for market tightness) used in our implementation closely follow the source paper, ensuring the analysis is grounded in established economic research.

5.2 The core components of the model

This section outlines the key economic building blocks of the model, explaining how they fit together to simulate the housing market.

5.2.1 How buyers and sellers meet (matching)

The model starts with a “matching function,” which captures the real-world process of buyers and sellers finding one another. We use a Cobb-Douglas matching function that defines the total number of sales based on the number of active buyers (b) and available vacant properties (v):

$$M(b, (1 - \delta)v) = \mu b^\alpha [(1 - \delta)v]^{1-\alpha}$$

where μ is the matching efficiency and α is the elasticity parameter. From this, we derive “market tightness,” represented by θ . This is the ratio of buyers to effective sellers:

$$\theta = \frac{b}{(1 - \delta)v}$$

Market tightness is a crucial indicator of market conditions. When θ is high, it’s a seller’s market (many buyers per property); when it’s low, it’s a buyer’s market.

The matching function determines the probability that an individual buyer finds a home in a given period:

$$m(\theta) = \frac{M}{b} = \mu\theta^{\alpha-1}$$

This probability decreases as market tightness increases (more competition among buyers).

5.2.2 The value of being a buyer, seller, or owner

The model uses “value functions” to calculate the long-term economic benefit associated with each position in the market.

- **For Homeowners:** The value comes from the utility of living in the home (ε), balanced against the risks of the property depreciating (δ) or needing to move (s).
- **For Sellers (with a vacant property):** The value is based on the eventual sale price (p), offset by the ongoing costs of keeping a property on the market (c_R), such as maintenance and taxes.
- **For Buyers:** The value is the prospect of becoming a homeowner, offset by the search costs (c_B). The model realistically assumes these search costs increase as the market becomes more crowded with other buyers.

5.2.3 How prices are determined (bargaining)

The final sale price is not set by an auctioneer but is determined through a negotiation between the buyer and the seller. The model uses a standard Nash bargaining framework to simulate this.

The process assumes that the buyer and seller split the total “surplus” or profit created by the transaction. The buyer’s share of this surplus is determined by their bargaining power, η . This negotiation is the channel through which taxes directly affect house prices. A tax on the buyer, for example, reduces the buyer’s potential surplus, which in turn lowers the price they are willing to offer.

5.2.4 How the market reaches a balance (free entry)

Finally, the model ensures the market reaches a stable equilibrium through “free-entry” conditions. This means:

- **For Buyers:** People will continue to enter the market to search for a home as long as the potential benefit of owning a home outweighs the costs of searching. The number of buyers stabilises when the expected value of searching becomes zero.
- **For Sellers:** Developers will continue to build new homes or owners will list their properties as long as the expected sale price is greater than the construction and vacancy costs (k and c_R). The number of listings stabilises when the expected profit from selling a house equals its cost.

These two conditions are the engine of the model. By allowing both buyers and sellers to respond to market conditions, the model can realistically capture the positive relationship between listings and buyers that we observe in the real world. Without this “double entry,” the model would incorrectly predict that when more homes are listed, the number of buyers falls.

5.3 The baseline model

This section presents the core equations of the model. To keep the framework clear, we start with a baseline scenario that makes a key simplifying assumption: all houses are identical, and all transactions happen at a single, uniform market price, p . This provides the foundation for the later analysis of different tax policies.

5.3.1 The value of market positions

The model defines the long-term value for a homeowner (H_t), a seller with a vacant property (V_t), and a buyer (B_t) at a point in time t . These values depend on the expected values in the next period, $t + 1$, discounted by a factor β .

Value of being a homeowner (H_t)

A homeowner receives utility from living in their home (ε) but faces the probability of needing to move (s) or the house depreciating (δ).

$$H_t = (1 - \delta)(1 - s)(\varepsilon + \beta \mathbb{E}_t[H_{t+1}]) + (1 - \delta)s(\varepsilon^B + k + \beta \mathbb{E}_t[B_{t+1}]) + \delta(\varepsilon^B + \beta \mathbb{E}_t[B_{t+1}])$$

Value of holding a vacant property (V_t)

A seller pays a cost (c_R) to keep their property on the market. They have a certain probability ($\theta_t m(\theta_t)$) of finding a buyer and receiving the sale price p_t .

$$V_t = -c_R + (1 - \delta)[(1 - \theta_t m(\theta_t)) \beta \mathbb{E}_t[V_{t+1}] + \theta_t m(\theta_t) p_t]$$

Value of being a buyer (B_t)

A buyer pays search costs ($c_B(b_t)$) and has a probability ($m(\theta_t)$) of finding a house. If successful, they gain the value of homeownership.

$$B_t = -c_B(b_t) + m(\theta_t)(\varepsilon - p_t + \beta \mathbb{E}_t[H_{t+1}]) + [1 - m(\theta_t)](\varepsilon^B + \beta \mathbb{E}_t[B_{t+1}])$$

In a **stationary equilibrium**, the market is stable over time, so we assume that expected future values are equal to current values (e.g., $\mathbb{E}_t[H_{t+1}] = H_t = H$). This allows us to remove the time

subscripts and solve for the long-run equilibrium of the market. The remainder of this section uses this stationary assumption, which is consistent with the Python script.

5.3.2 Determining the market equilibrium

For the market to be in a stable, stationary equilibrium, three key conditions must be met simultaneously.

Buyer entry condition (BE)

Buyers will enter the market until the cost of searching equals the expected reward. In equilibrium, the net value of being a buyer is zero ($B = 0$). This links the buyer's search cost to the surplus they get from a successful purchase.

$$\frac{c_B(b) - \varepsilon^B}{m(\theta)} = \frac{1 - \eta}{\eta} (p - \beta k) \quad (\text{BE})$$

House entry condition (HE)

Sellers will list properties until the profit from selling equals the cost of building/maintaining the property. In equilibrium, the value of a vacancy equals the construction cost ($V = k$).

$$k = \frac{(1 - \delta) \theta m(\theta) p - c_R}{1 - \beta(1 - \delta) [1 - \theta m(\theta)]} \quad (\text{HE})$$

Price rule (PP)

The price p is determined by the bargaining process between the buyer and seller, ensuring the total surplus from the sale is split according to their respective bargaining powers (η for the buyer, $1 - \eta$ for the seller).

$$p = \eta \frac{\varepsilon - \varepsilon^B + \beta[\varepsilon^B + (1 - \delta)sk]}{1 - \beta(1 - \delta)(1 - s)} + (1 - \eta) \beta k \quad (\text{PP})$$

5.3.3 Solution to the model

The model is solved by finding the values for the market price (p), market tightness (θ), and the number of buyers (b) that satisfy all three equilibrium equations (BE, HE, and PP) at the same time. The solution is found sequentially, mirroring the logic in the Python script:

1. **Calculate the Price (p):** The price is determined directly by the Price Rule (PP), which depends only on the model's fixed parameters.
2. **Solve for Market Tightness (θ):** With the price p known, we use the House Entry condition (HE) to solve for the unique level of market tightness (θ) that balances the costs and benefits for sellers.
3. **Solve for the Number of Buyers (b):** Finally, with both price (p) and tightness (θ) determined, we use the Buyer Entry condition (BE) to find the number of buyers (b) that will choose to enter the market.

From these three key variables, all other market outcomes (such as the number of vacancies, transaction volumes, and time-to-sell) can be calculated.

5.4 Modelling different tax regimes

To assess the economic impact of different property tax policies, we extend the baseline model to incorporate three tax regimes: the current SDLT system, a deferred SDLT variant, and our proposed Proportional Property Tax (PPT). Each regime affects market dynamics differently through its impact on transaction costs, bargaining outcomes, and homeownership values.

5.4.1 Introducing the current SDLT

To model the current Stamp Duty Land Tax (SDLT), we modify the baseline model to account for the tax paid by the buyer at the point of purchase. This is achieved by introducing a **tax wedge**, which creates a distinction between the price the buyer pays (p^B) and the price the seller receives (p^S).

The tax wedge and its impact

The tax wedge is defined by the SDLT rate, τ . The total price paid by the buyer is the seller's price plus the tax:

$$p^B = p^S(1 + \tau)$$

This wedge directly affects the value functions and the bargaining process.

- **Value Functions:** The value for a homeowner (H) is unchanged. However, the buyer's value (B) now depends on the higher price they pay, p^B , while the seller's value (V) depends on the lower price they receive, p^S .
- **Surplus and Bargaining:** The surplus for each party is calculated based on the price they actually face.
 - Buyer Surplus (S_B): $S_B = \varepsilon - \varepsilon^B - p^B + \beta H$
 - Seller Surplus (S_S): $S_S = p^S - \beta k$ The final price is still determined by the Nash bargaining rule, $\eta S_B = (1 - \eta) S_S$.

Equilibrium conditions with SDLT

The three key conditions for equilibrium are adjusted to reflect the tax wedge.

Price rule for seller Price (p^S)

By solving the bargaining problem with the tax wedge included, we arrive at a standalone equation for the price the seller receives. This price is discounted relative to the no-tax price, reflecting the fact that the buyer's ability to pay is reduced by the tax liability.

$$p^S = \frac{1}{1 + \eta\tau} \left(\eta \frac{\varepsilon - \varepsilon^B + \beta[\varepsilon^B + (1 - \delta)sk]}{1 - \beta(1 - \delta)(1 - s)} + (1 - \eta) \beta k \right) \quad (\text{PP-SDLT})$$

House entry condition (HE)

Sellers' decisions depend only on the price they actually receive, p^S . The structure of the HE condition is therefore unchanged.

$$k = \frac{(1 - \delta) \theta m(\theta) p^S - c_R}{1 - \beta(1 - \delta) [1 - \theta m(\theta)]} \quad (\text{HE})$$

Buyer entry condition (BE)

The buyer entry condition is fundamentally derived from the buyer's surplus (S_B). The economic intuition is that buyers will enter the market until their expected net cost of searching equals the surplus they receive from a successful match. This is expressed as:

$$\frac{c_B(b) - \varepsilon^B}{m(\theta)} = S_B$$

For the convenience of solving the model with a single price (p^S), we use the Nash Bargaining rule ($\eta S_B = (1 - \eta) S_S$) to substitute the seller's surplus ($S_S = p^S - \beta k$) for the buyer's surplus. This yields the final form of the equation:

$$\frac{c_B(b) - \varepsilon^B}{m(\theta)} = \frac{1 - \eta}{\eta} (p^S - \beta k) \quad (\text{BE})$$

Solving the model with SDLT

With a standalone price rule for p^S , the model can again be solved sequentially. This is the logic implemented in the `simulation(regime="upfront")` function.

1. **Calculate the seller price (p^S):** The seller's price is determined directly by the modified price rule (PP-SDLT).
2. **Solve for market tightness (θ):** With p^S known, the house entry condition (HE) is used to solve for the unique equilibrium market tightness, θ .
3. **Solve for the number of buyers (b):** With p^S and θ known, the buyer entry condition (BE) determines the number of buyers, b .

From this, the buyer's price is found using the tax wedge ($p^B = p^S(1 + \tau)$), and all other market outcomes can be calculated.

5.4.2 Deferred SDLT

This model variant implements the deferred SDLT regime, where the tax is paid by the seller at the time of sale. The tax is calculated based on the price the *current* buyer pays in the transaction (p^B).

Most of the model structure remains identical to the Upfront SDLT variant, with the key difference being the **tax wedge**:

$$p^S = p^B(1 - \tau)$$

This equation reflects that the seller's effective receipt (p^S) is reduced by the tax payment. Compared to the standard SDLT, this shifts the tax burden from the buyer to the seller, which alters the outcome of the price negotiation and the resulting equilibrium.

While the key Bellman and entry equations use the same logic as before (with separate prices p^B and p^S), the different tax wedge leads to different equilibrium prices and market outcomes.

5.4.3 Proportional Property Tax (PPT)

This model variant implements a Proportional Property Tax (PPT) regime, an annual tax paid by homeowners, which differs fundamentally from a transaction tax.

The PPT mechanism

Under the PPT, there is no tax at the point of sale, so there is **no tax wedge**. The buyer's price and seller's price are the same:

$$p^B = p^S = p$$

Instead, the tax is an ongoing cost for homeowners. The annual tax liability is a fixed percentage, r , of the property's purchase price, p . This tax payment, $r \cdot p$, reduces the annual utility a homeowner receives from ε to $(\varepsilon - r \cdot p)$.

Impact on value and bargaining

This ongoing cost lowers the long-term value of being a homeowner (H) and, consequently, the surplus to be divided between the buyer and seller.

- **Homeowner Value (H):** The value function for a homeowner now incorporates the annual tax payment as a reduction in flow utility.

$$H = (1 - \delta)(1 - s)((\varepsilon - rp) + \beta H) + (1 - \delta)s(\varepsilon^B + k + \beta B) + \delta(\varepsilon^B + \beta B)$$

- **Surplus:** The buyer's surplus, $S_B = \varepsilon - \varepsilon^B - p + \beta(H - B)$, is now lower because the value of becoming a homeowner, H , is diminished by the future tax liabilities.

Equilibrium conditions with PPT

The equilibrium conditions are now defined in terms of the single market price, p .

Price rule (PP-PPT)

The bargaining process now accounts for the lower value of homeownership. This results in a market price, p , that is lower than it would be in a no-tax world. The price rule shows how the annual tax rate r proportionally reduces both components of the negotiated price:

$$p = \frac{1}{1 + \frac{\eta r}{1 - \beta(1 - \delta)(1 - s)}} \cdot \eta \frac{\varepsilon - \varepsilon^B + \beta[\varepsilon^B + (1 - \delta)sk]}{1 - \beta(1 - \delta)(1 - s)} + \frac{1}{1 + \frac{\eta r}{1 - \beta(1 - \delta)(1 - s)}} \cdot (1 - \eta) \beta k \quad (\text{PP-PPT})$$

House entry (HE) and buyer entry (BE) Conditions

The entry conditions are structurally identical to the baseline model, as there is no tax wedge. They are solved using the single market price, p , determined by the price rule above.

$$k = \frac{(1 - \delta) \theta m(\theta) p - c_R}{1 - \beta(1 - \delta) [1 - \theta m(\theta)]} \quad (\text{HE})$$

$$\frac{c_B(b) - \varepsilon^B}{m(\theta)} = \frac{1 - \eta}{\eta} (p - \beta k) \quad (\text{BE})$$

5.5 Summary of tax regimes

This section outlines the different tax policies analysed in the report. Each regime modifies the transaction process differently, primarily by changing the price the buyer pays (p^B), the net amount the seller receives (p^S), or by introducing an ongoing liability for the homeowner.

The table below summarises the four scenarios compared in our simulation. The tax rates (τ for transaction taxes, r for the annual tax) are calibrated to ensure each regime raises the same total revenue over the long term, allowing for a fair comparison of their economic impact.

Regime	Price buyer pays (p^B)	Price seller receives (p^S)	Ongoing liability	Notes
(A) Upfront SDLT	$p^S(1 + \tau)$	p^S	None	Current UK system
(B) Deferred SDLT	p^B	$p^B(1 - \tau)$	None	Tax paid by seller
(C) Prop. Property Tax	p	p	$r \times p$ annually	No transaction tax
(D) No Tax	p	p	None	Theoretical benchmark