

MEASURING THE NATIONAL WEALTH
IN LATE EIGHTEENTH-CENTURY BRITAIN

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Abstract: Early modern economic historians continue to be fascinated and perplexed in equal measure by the national income and social structural estimates of late seventeenth-century political arithmetic (for two recent discussions see Slack 2004; Arkell 2006). For Richard Stone, William Petty's pioneering national accounts – which implied a national income of £40 million in 1665 – represent a 'landmark in economic history' (Stone 1997:30). By contrast, the income estimates of a century later, generated in connection with William Pitt the Younger's income tax proposal, no longer command significant scholarly interest.

Having been superseded by Deane and Cole (1962), whose estimates have in turn been challenged and revised by Crafts (1985) and Broadberry et al (2010), the national income estimates of William Pitt (£125 million), Henry Beeke (£209-£217 million), Benjamin Bell (£236-£243 million), and Patrick Colquhoun (£222 million) are now largely redundant from the point of view of historical national accounting, and indeed economic history more generally. It is arguably only Colquhoun's updated version of Gregory King's social table that has attracted any sustained analysis in the last three decades (Lindert and Williamson, 1983). The aim of this paper is not to rehabilitate these commentators' calculations, but rather to assess the extent to which their estimates stemmed from similar methodological and theoretical assumptions concerning the measurement of national income. I aim to shed new light on how contemporaries conceptualized the national economy.

Whereas Slack (2004:625) has argued that in the late seventeenth century '[William] Petty set the numerical parameters as well as the methodology for his successor [Gregory King]', I find that the late eighteenth and early nineteenth-century heirs to the Petty-King tradition displayed a much greater degree of numerical and methodological autonomy. To account for this I examine the contrasting policy objectives of the commentators under consideration, drawing attention to the significance of Pitt's decision to exempt labourers' incomes from his new income tax. Although Pitt shared with Petty and King a desire to mobilize a greater share of national income for military ends, he differed on the means. Rather than increase excise duties, as Petty and King had consistently advocated, Pitt sought to make the tax burden fall more heavily on the wealth of landed, mercantile and professional classes in order to make the distribution of taxes more equal. Pitt's decision to exempt wages from his new tax provoked a flurry of other, more comprehensive, national income estimates, one purpose of which was to cast doubt on the reliability of Pitt's revenue forecasts.

At one level, then, the alternative estimates of national income produced by Benjamin Bell and Henry Beeke in particular can be understood as deliberate interventions designed to influence (and change) fiscal policy. At another level, however, Bell and Beeke made profoundly different assumptions about the size of the British economy's land and labour inputs to arrive at their estimates. I explore these differences and show how sensitive estimates of national income were to what were little more than conjectures about Britain's recent demographic history. Thus while in some respects political arithmetic – or the art of expressing oneself 'in Terms of Number, Weight, or Measure' (Petty 1690) – had shed some of its methodological uniformity by the late eighteenth century, in other respects, it remained severely hampered by the failure of central government to provide better data on the basic parameters of economic activity. Seen in this light, late eighteenth-century efforts to measure national wealth thus provide one important, and hitherto neglected, context for understanding the origins of the first British census of 1801.

On 3 December 1798, the Prime Minister and Chancellor of the Exchequer, William Pitt the Younger, informed the House of Commons of his plan to ‘impose a tax more equal, and more universal in operation, and therefore more just and more productive’. In place of his previous Budget’s Aid and Contribution for the Prosecution of the War – the so-called ‘Triple Assessment’¹ – Pitt announced a tax ‘upon the leading branches of income.’² Crucially, this was, like its predecessor, a tax on the wealthier classes, principally those with annual incomes of more than £200, who would be taxed at 10 per cent. Annual incomes of less than £200 were to be taxed according to a sliding scale consisting of twenty-eight increments, down to a minimum rate of 0.83 per cent on £60. Anyone earning under £60, which would have included all labourers, was exempt.³

This proposal, I would like to argue, signalled Pitt’s intention to reverse the long-term trend of eighteenth-century fiscal policy. The share of total public revenue derived from the land tax and the various other assessed taxes had fallen from a peak of 39 per cent in 1710 to no more than 16 per cent by 1795. Over the same period, customs and excise duties had become an increasingly important component of the tax base, and by 1795 contributed nearly half of all revenue, up from less than a third in the early eighteenth century.⁴ At one level, the income tax was simply a continuation of the Triple Assessment since both measures were designed to extract more revenue from the better off. The Triple Assessment had used luxury consumption as an indirect income proxy, while the income tax targeted income directly. At another level, however, the income tax was an important innovation precisely because it symbolised the failure of traditional methods of taxation to keep pace with the state’s demand for revenue. This failure is particularly apparent if one considers Pitt’s attempt to estimate the income tax’s yield. So fragile were the national income data on which Pitt based his revenue projections that two commentators, Benjamin Bell (1749-1806) and Henry Beeke (1751-1837), published alternative estimates within six months of the enactment of the income tax.⁵ This paper will compare the different national income estimates that were made in connection with the income tax, paying particular attention to the methodologies employed in their construction. The second part of the paper will focus on Pitt’s estimate, and its relationship with those of Sir William Petty and Gregory King. In the third part, meanwhile, I will consider objections to Pitt’s income tax proposal. In particular I shall consider the alternative calculations of Beeke and Bell, both of whom argued that national income was significantly larger than Pitt’s estimate implied.

¹ This included a range of different consumption taxes on ‘Male Servants, on Carriages, or on Horses kept for the Purpose of riding, or of drawing any such Carriages ... Houses, Windows, or Lights, or on inhabited Houses, on Dogs, or on Clocks, Watches, or Timekeepers’, An Act for granting to His Majesty an Aid and Contribution for the Prosecution of the War, 38 Geo. 3, c. 16.

² *Parliamentary Register* [hereafter *PR*] (1796-1802), vii. p. 99

³ *Ibid.* pp. 117-8; An Act to repeal the Duties imposed by an Act, made in the last Session of Parliament, for granting an Aid and Contribution for the Prosecution of the War; and to make more effectual Provision for the like Purpose, by granting certain Duties upon Income, in lieu of the said Duties, 39 Geo. 3, c. 13.

⁴ Calculated from B. R. Mitchell, *British historical statistics* (Cambridge, 1988), pp. 575-77.

⁵ [Benjamin Bell], *Three essays, on taxation of income* (London, 1799); Henry Beeke, *Observations on the produce of the Income Tax, and on its proportion to the whole income of Great Britain* (London, 1799).

First, however, it is necessary to explain why these estimates are worth studying at all. After all, since the publication of Deane and Cole's landmark *British economic growth, 1688-1959*, the estimates of Pitt, Bell and Beeke have been largely forgotten.⁶ Shortly before *British economic growth* was published, however, Deane wrote an article that compared the late eighteenth-century estimates with those of the preceding century or so, principally Gregory King's and Arthur Young's.⁷ On the basis of 'a deliberately generous interpretation of contemporary estimates' Deane thought national income could have been no higher than £200 million by 1800. Since this gave a per caput income figure of £22.20, i.e. only 20 per cent above the level stated by Arthur Young in 1770, Deane concluded, albeit tentatively, that 'real incomes advanced little if at all in relation to population at the end of the [eighteenth] century'.⁸

Deane was puzzled by this result because it appeared to contradict other evidence which implied that 'British industry began the process of its conspicuous transformation' in the last three decades of the eighteenth century.⁹ By the time *British economic growth* appeared, seven years later, Deane and Cole had constructed their own independent national income estimate for *c.* 1800, derived from extant income tax assessments and wage data. They found that total national income stood at £232 million, or 16 per cent higher than Deane's earlier 'deliberately generous interpretation of contemporary estimates'. Arthur Young's estimate for 1770, of £130 million, was allowed to stand, however. Although Deane and Cole suggested that 'discrepancies between our independent estimates and those derived from contemporary calculations are within the margin of error of both', the effect of raising the level of national income by 16 per cent in 1800 was to increase the nominal growth rate between 1770 and 1800 from 1.4 per cent p.a. to 1.9 per cent p.a.¹⁰ In other words, it would appear that Deane and Cole rejected the contemporary evidence from Pitt, Bell and Beeke because it contradicted their own insistence on 'the truly revolutionary developments' of the period 1770-1801.¹¹

We now no longer accept this story of rapid and revolutionary growth after 1770, thanks largely to the work of N. F. R. Crafts.¹² When Crafts published revised estimates of growth in national product, he made no reference at all to the contemporary estimates of Pitt, Bell and Beeke. Indeed, the only contemporary estimates that he cited were those of Gregory King, Joseph Massie and Patrick

⁶ Phyllis Deane and W. A. Cole, *British economic growth 1688-1959* (Cambridge, 1962).

⁷ Phyllis Deane, 'The implications of early national income estimates for the measurement of long-term economic growth in the United Kingdom', *Economic development and cultural change*, 4 (1955), pp. 3-38.

⁸ Deane, 'Implications', pp. 30, 38.

⁹ *Ibid.*, p. 30.

¹⁰ Phyllis Deane and W. A. Cole, *British economic growth 1688-1959* (Cambridge, 1962), pp. 160-1 and p. 160, n. 2.

¹¹ *Ibid.*, p. 162.

¹² N. F. R. Crafts, *British economic growth during the industrial revolution* (Oxford, 1985).

Colquhoun.¹³ Interestingly, however, the effect of Crafts' revision of Deane and Cole was to lower annual growth in national product from 2.06 per cent p.a. to 1.32 per cent p.a. for the period 1780-1801.¹⁴ One obvious implication of this might be that Deane and Cole were too hasty in their rejection of Pitt, Bell and Beeke. If we accept both Arthur Young's 1770 estimate and an upper bound total of £200 million for c. 1800, then we find that the difference between contemporary national income totals and Crafts' independent calculations are relatively slight.

This is, however, a very big 'if'. It is not at all clear why we should accept either Arthur Young's estimate or Deane's 'deliberately generous' amalgamation of Pitt, Bell and Beeke. Deane and Cole did not explain why they were content to accept Young's 1770 national income total, but not the £200 million figure for 1800. *A priori*, there was surely a stronger case for rejecting the 1770 total precisely because it was single-sourced. By extension, we might also ask why Lindert and Williamson – whose revisions of King, Massie and Colquhoun were adopted by Crafts – selected Colquhoun in preference to Pitt, Bell and Beeke. Lindert and Williamson devoted no more than a single footnote to this question, noting that 'limits of space prevent our dealing here with the sketchy social estimates ... of Pitt, Beeke, and Bell around 1800 ... we chose Colquhoun (1806) over Beeke (1800) because the former (a) referred to England and Wales, like King and Massie, (b) was based on the census of 1801 and the poor relief returns of 1802 to 1803, and not just the earliest income-tax returns to Beeke, and (c) gave more occupational detail.'¹⁵ The validity of each of these claims is in fact highly questionable, as I will show towards the end of this paper.¹⁶

A far more plausible explanation for this privileging of Colquhoun is that he adopted essentially the same social accounting framework pioneered by King, and subsequently copied by Massie. It is much easier to compare change over time between King and Colquhoun, than between King and Pitt. Indeed, Colquhoun stated explicitly that

by connecting sources of national income and the springs of industry and enterprise with the known population of the country, a chart is thus formed of the state of society in 1803, compared with what existed in 1688, one hundred and fifteen years ago; and great as the accession of wealth may appear to be, on a comparison of the two, there cannot exist a doubt of its reality to the fullest extent which is exhibited as to the aggregate amount of the national income¹⁷

Given this, it is understandable that late twentieth-century economic historians interested in long-run change should have used Colquhoun as a benchmark, rather than his contemporaries. In the 1830s, by contrast, the world's 'first professional economist', John Ramsay McCulloch, was extremely

¹³ As modified by Lindert and Williamson: Peter H. Lindert and Jeffrey G. Williamson, 'Revising England's social tables, 1699-1812', *Explorations in economic history*, 19 (1982), pp. 385-408; idem., 'Reinterpreting Britain's social tables, 1688-1913', *Explorations in economic history*, 20 (1983), pp. 94-109.

¹⁴ Tab. 2.11, Crafts, *British economic growth*, p. 45.

¹⁵ Lindert and Williamson, 'Revising', p. 385, n. 1.

¹⁶ See also S. J. Thompson, 'Census-taking, political economy and state formation in Britain, c. 1790-1840' (unpublished PhD dissertation, University of Cambridge, 2010), pp. 119-26.

¹⁷ Patrick Colquhoun, *A treatise on indigence; exhibiting a general view of the national resources for productive labour* (London, 1806), p. 21.

dismissive of Colquhoun's efforts. 'The guesses of Dr Colquhoun', McCulloch wrote in 1835, are 'entitled to as much credit as the stories in the *Arabian Nights*, but to very little more'.¹⁸ For McCulloch, the only national income estimate of any merit was Henry Beeke's. In the same article in which he attacked Colquhoun, McCulloch praised Beeke's 'elaborate and excellent tract on the Income Tax' for exposing the 'extreme inaccuracy' of Pitt's estimate of national acreage.¹⁹ Two years later, McCulloch remarked that 'during the long interval between Sir William Petty and Dr Beeke, statistical science could hardly be said to exist.'²⁰ McCulloch, it must be acknowledged, was by no means an unbiased judge.²¹ His own *Statistical account of the British empire* was published as a rival to Colquhoun's *Treatise on the wealth, power and resources of the British empire* (1814). More importantly, however, McCulloch dissented from Colquhoun's fundamental analytical distinction between productive and unproductive labour.²²

The purpose of this preliminary discussion is to suggest that previous evaluations of late eighteenth- and early nineteenth-century national income estimates have been unduly influenced by the scholarly priorities of those who have made use of them. Deane's intention in amalgamating the estimates of Pitt, Bell and Beeke was to diminish differences between them in order to produce a consensus total that could be compared with Arthur Young's total for 1770. She subsequently discarded the contemporaries' 'consensus' when it became clear that £200 million was too low a figure to be consistent with 'revolutionary' change in the period 1770-1800. Perhaps because of Deane's rejection of Pitt, Bell and Beeke, Lindert and Williamson did not see any reason to engage seriously with their work. As a result, they chose Colquhoun virtually by default, although direct comparability with King and Massie must also have been an important factor. For J. R. McCulloch, meanwhile, theoretical, not to mention commercial, considerations appear to have affected his view of the relative merits of Beeke and Colquhoun. In what follows I want to offer a more objective appraisal of Pitt, Bell and Beeke, which will explain differences between their estimates, rather than efface them. While this exercise will tell us relatively little about changing living standards over the eighteenth century, it will shed a certain amount of light on how Bell and Beeke in particular thought about income distribution in the late eighteenth century.

¹⁸ [J. R. McCulloch], 'State and defects of British statistics', *Edinburgh Review*, 61 (1835), p. 169.

McCulloch's biographer, D. P. O'Brien, described him as the first person 'who lived by means of his learning': D. P. O'Brien, *J. R. McCulloch: a study in classical economics* (London, 1970), p. 15.

¹⁹ *Ibid.*, p. 159

²⁰ J. R. McCulloch, *A statistical account of the British Empire, exhibiting its extent, physical capacities, population, industry, and civil and religious institutions* (2 vols, London, 1837), i. p. v.

²¹ Cf. Joseph Schumpeter's comment that Colquhoun had been 'unintelligently sneered at by McCulloch': Schumpeter, *History of economic analysis*, ed. Elizabeth Boody Schumpeter (London, 1955), pp. 521-2 and n. 3.

²² Colquhoun derived this distinction from Adam Smith. On this issue, McCulloch parted company from a tenet of Smithian analysis that had been accepted by 'Ricardo, Malthus, and indeed by virtually all the other Classical economists except Senior': see O'Brien, *J. R. McCulloch*, p. 299; Thompson, 'Census-taking', p. 129.

II

When Deane attempted to compare late eighteenth-century income estimates with the earlier calculations of Arthur Young and Gregory King, she was following in the footsteps of William Pitt. During his Budget speech on 3 December 1798, Pitt cited different statements of total annual rental derived from Sir William Petty ('the earliest author whom I have consulted'), Gregory King and Charles Davenant ('two writers of credit'), Adam Smith ('the celebrated author of the Treatise on the Wealth of Nations'), and Mr. Arthur Young ('who ... made agricultural pursuits his study'). Given the length of time since Petty's death (111 years), it goes without saying that his estimate of rental value was the lowest quoted, at £8 million. Davenant and King had 'represented the rent of land to be 14,000,000', while Adam Smith and Arthur Young, both writing in the mid-1770s, valued total rental at £20 million.²³

Notwithstanding Pitt's comment that his reason for mentioning 'all these authorities' was to 'shew what has been the amount of the rent of land at different periods', and more particularly, to 'shew how great has been the increase upon it within the last ten years', even the most recent rental estimate he used had been published 'full twenty years ago'.²⁴ There was, in other words, a sizeable empirical gap between Pitt's authorities and his own insistence on a great increase within the last decade. Moreover, Pitt's own estimate of land rental (£25 million) – only £5 million higher than the mid-1770s consensus – implied slower nominal growth since 1779 than the £6 million difference between Petty's *Political arithmetick* (written c. 1671/2, but only published posthumously in 1691) and Charles Davenant's *Discourses on the publick revenue* (1698).²⁵ Indeed, Pitt quickly backed away from any suggestion that the preceding two decades had been a period of rapidly rising landed incomes. As a result of his decision not to tax annual incomes of less than £60, Pitt assumed 'a deduction of one-fifth' from his total, thereby lowering the taxable value of rents to £20 million. Pitt therefore presented a curiously ambiguous, even contradictory, account of recent trends in rental income. To understand why, we need to consider the broader fiscal context, as well as the data at his disposal.

As I noted earlier, the income tax was introduced following the failure of the Triple Assessment. Instead of raising £7.5 million, as Pitt had first forecast, the Triple Assessment probably brought in

²³ Cf. William Petty, 'Verbum sapienti', pp. 3-7 in *The political anatomy of Ireland* (London, 1691); William Petty, *Political arithmetick* (London, 1690), p. 32; [Charles Davenant], *An essay upon the probable methods of making a people gainers in the ballance of trade* (London, 1699), Schemes B, D and E facing pp. 22-3, 70; [Charles Davenant], *Discourses on the publick revenues, and on the trade of England* (2 vols, London, 1698), i. p. 23; [Arthur Young], *A six months tour through the north of England* (4 vols, London, 1770), i. pp. 493-4; 547; Adam Smith, *An inquiry into the Nature and Causes of the Wealth of Nations* (2 vols, Oxford, 1976), V.ii.a.17, p. 823.

²⁴ *PR* (1796-1802), vii. p. 104. William Pulteney, *Considerations on the present state of public affairs, and the means of raising the necessary supplies* (London, 1779), pp. 29-30.

²⁵ Implied annual growth in the value of rents between 1671/2 and 1698 was 2.1 per cent; implied annual growth between 1779 and 1798 was 1.2 per cent.

less than £3 million.²⁶ Pitt himself blamed this on two causes. First, the Commons' amendments to his original Bill 'necessarily diminished' the anticipated yield. The second cause, Pitt argued, was 'the latitude given to evasion, if not to fraud'.²⁷ Perhaps not surprisingly, Pitt did not countenance the possibility that his own estimates might have been flawed. After all, the tax office had been collecting the assessed taxes for many years and was therefore capable of producing robust data on historic yields.²⁸ Rather than assess consumption of taxed articles at higher rates, Pitt's plan involved taking an individual's previous assessment and multiplying it by a given factor, which varied according to the level of past assessment. It was therefore not strictly a consumption tax at all, since the amount one paid was determined by the previous year's consumption, not the current year's. Moreover, the act also provided a loophole whereby taxpayers could opt out of paying tax on past assessments and instead pay tax on a declared level of (current) income. This is what Pitt meant when he referred to evasion and fraud. From Pitt's point of view, the enormous shortfall in revenue must have been a serious embarrassment. This sense of embarrassment helps to explain Pitt's perceptible ambivalence on the question of how much rental income had increased in the previous ten or twenty years. On the one hand, Pitt was clearly keen to defend his own record in office by alluding to the country's increasing wealth. On the other, that very record was threatened by the extremely disappointing Triple Assessment receipts, not to mention the run on the Bank of England in February 1797 which had forced Pitt to introduce the Triple Assessment in the first place.

Having stated the value of rents at £25 million, Pitt remarked that 'I cannot be considered a very sanguine calculator.'²⁹ His pessimistic credentials now firmly established, Pitt all but abandoned any attempt to structure the rest of his discussion in terms of conventional economic categories, or to use well-known works of political arithmetic.³⁰ As a result, it is not possible to compare Pitt's statement of taxable property with the more comprehensive national income accounts of William Petty, Gregory King, Charles Davenant, or Arthur Young. Indeed, it would be a mistake to think that long-run comparisons were anything more than a tactical feint on Pitt's part. Since his principal objective was to demonstrate that the income tax would raise a specified level of revenue – 'no less a sum than 10,000,000l.' – the total taxable value imputed to rent; tenants' profits; tithes; mines, canals and timber; house rent; professional salaries; Scottish, Irish and west Indian incomes; stock income; foreign trade, domestic and other trade had to exceed £100 million, given a ten per cent rate of tax.³¹

²⁶ John Ehrman, *The younger Pitt* (3 vols, London, 1969-1996), iii. p. 259.

²⁷ *PR* (1796-1802), vii. p. 97.

²⁸ Four days after Pitt presented his Budget for 1798 – which included the Triple Assessment – the tax office tabled an account of the assessed tax revenue collected for 1796-7: 'An Account of the Amount of the Assessed Taxes for One Year, ending the 5th April 1797, estimating the Charges on each Article for Four Quarter, and deducting therefrom the Charges of Management', reprinted in Sheila Lambert, ed., *House of Commons Sessional Papers of the Eighteenth Century* (147 vols, Wilmington, Delaware, 1975-), cxvii., pp. 23-8.

²⁹ *PR* (1797-1802), vii. p. 105.

³⁰ The only subsequent allusion to a known authority was when Pitt compared his 'very moderate' valuation of tithe income with Arthur Young's: *PR* (1796-1802), vii. p. 105.

³¹ *PR* (1796-1802), vii. p. 110.

What is more, the income categories that Pitt enumerated were entirely present-centred and reflected the proposed structure of the income tax.³²

Table 1: Henry Beeke's tabulation of Pitt's income estimates

Computation of the Income of Great Britain, as stated by Mr. PITT in the House of Commons; distinguishing the Part likely to be taxable under the Act.

	Annual In- come. £.	Deduction. £.	Taxable In- come. £.
Landlords' rents, 40,000,000 of cultivated acres, estimated at 12s. 6d. per acre	25,000,000	$\frac{1}{3}$ 5,000,000	20,000,000
Tenants' profits at three fourths	19,000,000	$\frac{1}{3}$ 13,000,000	6,000,000
Tithes	5,000,000	$\frac{1}{3}$ 1,000,000	4,000,000
Mines, [inland] navigation, and timber	3,000,000		3,000,000
Houses	6,000,000	$\frac{1}{3}$ 1,000,000	5,000,000
Professions	2,000,000		2,000,000
Proportion for Scotland	5,000,000		5,000,000
Income from possessions beyond sea	5,000,000		5,000,000
Interest on funds, after deducting foreign property, and sums issued to commissioners as sinking fund and interest to capital redeemed	15,000,000	$\frac{1}{3}$ 3,000,000	12,000,000
Profit on foreign trade, suppose 15l. per cent. on 80,000,000l. of capital insured	12,000,000		12,000,000
Ditto home trade, at 15l. per cent.	18,000,000		18,000,000
Other trade	10,000,000		10,000,000
	<u>£. 125,000,000</u>	<u>23,000,000</u>	<u>102,000,000</u>

Source: Henry Beeke, *Observations on the produce of the income tax, and on its proportion to the whole income of Great Britain* (2nd edn, London, 1800), p. 5.

Pitt, then, was interested in national accounting for limited and short-term ends. He made only a fleeting reference to long-run economic change. The kinds of issues which pre-occupy modern national accountants, such as changing living standards and levels of income inequality, simply did not feature in Pitt's analysis. Unlike William Petty, Gregory King and Charles Davenant, Pitt made no attempt to draw international comparisons with France and Holland in his exposition of national wealth and resources. Moreover, from both a methodological and a fiscal perspective, Pitt's objectives were diametrically opposed to those of his late seventeenth-century forebears, to whom we shall now turn.

As Paul Slack has shown, the procedure adopted by Petty in 'Verbum sapienti', which contains his earliest attempt to construct a national balance-sheet, was to begin with the expenditure side and multiply total population by per caput consumption.³³ Petty assumed a population of 6 million (derived from John Graunt) and valued annual consumption at £6 13s. 4d. per head (or just under 4½d. per diem). This produced a conveniently round total of £40 million. On the income side, Petty began with rent and estimated it in the same way as expenditure, that is by multiplying total acreage (24 million acres) by an average per acre value (6l. 1s. 8d. at 18 years' purchase). He then estimated

³² Schedule A dealt with rents; schedule B with the produce of land; schedule C taxed rentiers; schedule D taxed mercantile, commercial and manufacturing profits, together with professional earnings and salaries; and schedule E taxed public offices, pensions and stipends. See Arthur Hope-Jones, *Income tax in the Napoleonic Wars* (Cambridge, 1939), p. 6.

³³ Paul Slack, 'Measuring the national wealth in seventeenth-century England', *Economic History Review*, 57 (2004), p. 613.

the ‘annual proceed’ of various kinds of stock, including housing, shipping, livestock, coin, wares, merchandise, utensils, plate, and furniture, concluding that all of these taken together produced £7 million of income.³⁴ This figure, combined with £8 million rent, meant Petty still had a further £25 million of income to account for in order to balance income and expenditure.

His solution, expressed at the start of chapter 2, was to deduce that ‘the labour of the People must furnish the other 25’. Petty attempted to demonstrate the arithmetic plausibility of this by proposing an income distribution in which 3 million inhabitants earned on average 8l. 6s. 8d. per year (based on a working year of 287 days and an average daily wage of 7d.). He then disaggregated this further, dividing the working population into six quantiles, so that daily income was distributed according to an arithmetic progression, rising in 2d. increments, from 2d. to 12d.³⁵ In other words, the top quantile earned six times more than bottom quantile. This income distribution was, of course, entirely fictitious and was clearly contrived to produce Petty’s assumed mean of 7d. per day. While Petty was clearly numerically agile, it is doubtful whether his assumptions concerning average daily wages, or the length of the working year, were at all empirically-grounded. This is consistent with Slack’s observation that Petty’s initial total – £40 million – was an ‘*a priori* hypothesis ... adopted because it seemed to give results of the right order of magnitude.’³⁶

Charles Davenant and Gregory King both adopted the same basic procedure as Petty, that is, deducing national expenditure from population multiplied by per caput consumption.³⁷ King, however, parted company from his fellow political arithmeticians in his much fuller exposition of income distribution. Rather than divide his working population into six equal parts, as Petty had done, King produced an apparently more inductive representation of social structure, comprising 26 ‘ranks, degrees, titles, and qualifications’. These groups were unequal in size and income share, varying from 26 households (spiritual lords) to 400,000 households (cottagers and paupers). As previous scholars have pointed out, there are strong grounds for doubting the reliability of King’s social table.³⁸ For present purposes, however, I simply want to note that the two different approaches to income distribution pioneered by Petty and King – deductive and inductive – were revived a century or more later by Henry Beeke and Patrick Colquhoun.³⁹

Neither method was adopted by William Pitt, however. As I observed at the very beginning of the paper, Pitt proposed to exempt all incomes under £60 from his new tax. Consequently, it did not make sense for Pitt to derive national expenditure (and therefore national income) by multiplying

³⁴ William Petty, ‘Verbum Sapienti’ in *The political anatomy of Ireland* (London, 1691), pp. 4-7.

³⁵ In the printed version of ‘Verbum sapienti’, the 1/6th earning 6d. *per diem* was omitted.

³⁶ Slack, ‘Measuring’, p. 616.

³⁷ Slack, ‘Measuring’, p. 622. Davenant multiplied 7 million inhabitants by £7 per head expenditure; King multiplied 5.5 million inhabitants by £7 11s. 4d.

³⁸ Most recently, Tom Arkell, ‘Illuminations and distortions: Gregory King’s Scheme calculated for the year 1688 and the social structure of later Stuart England’, *Economic History Review*, 59 (2006), pp. 32-69.

³⁹ See pp. 21-2, below.

population by per caput consumption. To produce a plausible estimate, he would have needed a robust population total, an estimate of average per caput consumption, and detailed evidence on income distribution. Since none of this information was readily available, Pitt remained silent on the question of total national income.

Moreover, even if Pitt had been able to lay his hands on this kind of data, there were strong policy arguments against using it. National accounting for Petty, Davenant and King was not a value-neutral analysis of the country's wealth and prosperity, but was intended to strengthen the case for a redistribution of taxes for the explicit purpose of financing warfare.⁴⁰ Notwithstanding variations in emphasis and method, Petty and his followers consistently lobbied for higher consumption taxes. In 'Verbum sapienti', for example, Petty used his national income findings on the total value of land, stock and labour to argue that 'of all and every sum to be raised, the Land and Stock must pay 3 parts; and the People considered without any Estate at all, 5 more; the whole into 8 divided.'⁴¹ He suggested that the best method for achieving this was through a poll tax and excise on consumption.⁴² Writing three decades later, during the mid-1690s, Davenant used a Petty-inspired statement of national income – which valued rental at £10 million, trade at £6 million and 'Sciences, Arts, Labour, Industry, Manufacture, Retailing' at £33 million – to criticise existing fiscal policy for laying taxes 'chiefly upon Land, and Foreign Trade, which are about one third part of the strength of *England*; and the other two thirds of its strength we let escape'. He insisted that excises 'seem the most proper *Ways and Means* to support the Government in a long War, because they would lye equally upon the whole, and produce great Sums, proportionable to the great Wants of the Public.'⁴³ Gregory King was less polemical but nevertheless presented 'a general excise' as the only fiscal measure that would allow war against France to be continued.⁴⁴

The principal function of the earliest national income statements, I would like to suggest, was to expose the narrowness of the existing tax base. National accounts provided a framework for thinking about how the number of taxpayers could be increased. For Petty, Davenant and King, consumption taxes offered a key with which to unlock hitherto untapped supplies of revenue. It is worth noting, however, that labour income was always estimated indirectly in the late seventeenth century: it was a remainder value that made income balance expenditure. The relative share of labour income varied from 46 per cent in Charles Davenant's calculations of 1698 to as much as 70 per cent in Gregory

⁴⁰ Cf. Slack's remarks that 'taxes and political arithmetic went hand in hand': 'Measuring', p. 608.

⁴¹ Petty, 'Verbum sapienti', p. 9.

⁴² Ibid., p. 13.

⁴³ [Charles Davenant], *An essay upon ways and means of supplying the war* (London, 1695), pp. 120-22.

⁴⁴ Gregory King, 'Natural and political observations and conclusions upon the state and condition of England, 1696', §10, p. 62 in George Chalmers, *An estimate of the comparative strength of Great-Britain* (London, 1804).

King's 1688 balance sheet.⁴⁵ This suggests that although Petty, Davenant and King agreed on the mechanism for expanding the tax base, they differed on the exact proportion to be extracted from 'the People considered without any Estate at all'.

A century later, William Pitt had quite different fiscal objectives. He was not principally concerned with expanding the breadth of the tax base, but rather increasing its depth. When he introduced the Triple Assessment, Pitt told the Commons that its 'great object' was 'to allot fairly and equally to every class that portion which each ought to bear'. It would, he claimed, 'exclude those who are least able to contribute' and 'distinguish the gradation of classes'.⁴⁶ This principle was restated forcefully the following year, when Pitt insisted that the income tax would be 'a tax more equal, and more universal in its operation, and therefore more just and more productive' than the Triple Assessment.⁴⁷ In much the same way that Petty and Davenant argued that taxes on consumption were the *only* means of distributing the costs of war fairly, Pitt was adamant that his new tax would alleviate the 'burdens of the country' in the most equitable way possible.⁴⁸ Pitt's decision to omit labour income from his estimates, and therefore stay silent on the value of *national* income, may well have been a deliberate strategy. Had he estimated the value of all earnings under £60 p.a. it is entirely plausible to suppose that critics of the income tax would have asked why he was letting so much wealth slip through the tax office's grasp.

III

In parliament, at least, Pitt's omission of labour income from his calculations escaped sustained scrutiny. Opponents chose instead to focus their attacks on the *principle* of the income tax, rather than the plausibility of Pitt's figures. Sir John Sinclair, for example, objected to Pitt's plan because it made no distinction between earned and unearned income. Sinclair proposed a hybrid tax of half a per cent on capital and five per cent on income. This would, Sinclair claimed, relieve greatly 'persons who had no capital', while forcing those 'possessed of considerable property' to 'pay more in proportion to their opulence'. Sinclair also suggested that the income tax might even lower national income by encouraging the emigration of the 'ingenious mechanic, the industrious artisan, the adventurous manufacturer, the hardy seaman, and the skilful husbandman', upon whom the 'boastful power and opulence of the British nation depended.'⁴⁹ Similar arguments were put forward by Benjamin Hobhouse and William Smith. For Hobhouse, the profits of trade were like 'the annual

⁴⁵ King's figures were printed in [Charles Davenant], *An essay upon the probable methods of making a people gainers in the balance of trade* (London, 1699); Charles Davenant, *Discourses on the publick revenues, and on the trade of England* (2 vols, London, 1698), i. p. 23. William Petty assumed that labour income amounted to around 62 per cent of national income: William Petty, 'Verbum sapienti', pp. 3-7 in *The political anatomy of Ireland* (London, 1691); William Petty, *Political arithmetick* (London, 1690), p. 32.

⁴⁶ *PR* (1796-1802), iv. pp. 273-4.

⁴⁷ *PR* (1796-1802), vii. p. 99.

⁴⁸ *Ibid.* p. 111.

⁴⁹ *PH*, xxxiv. 81.

shoots of a tree which augment the mass of it', and not to be confused with 'the seed, or fruit which is annually produced, and is annually separated from it.' The effect of the income tax would be to lop off the tree's shoots 'and thus the growth of the tree would be checked'.⁵⁰ Meanwhile William Smith asked 'upon what principle of political economy could they pronounce that measure to be wise, honest, politic, and just, which would impose an equal tax upon indolence and industry?'⁵¹

Pitt and his fellow ministers rejected in the strongest terms to Opposition claims that the income tax should distinguish between earned and unearned income. This was nothing less than 'light flippant theory' and 'the offspring of mere temporary unthinking policy', according to Pitt.⁵² The War Secretary, Henry Dundas, told MPs that 'it was not the practice in the imposition of taxes ... to enter into any distinction of men; it was not the practice to call this man by one name, and another man by another name, to point out one class as indolent, and a nuisance, because he happened to live on an estate'.⁵³ For Pitt, any difference in the nature of incomes arose 'out of the nature of society, and the distribution of its rank, and the classification of its property'.⁵⁴ The purpose of the income tax, Lord Hawkesbury insisted, was to preserve 'that order and just distinction of classes which God and Nature everywhere wisely established and maintained'.⁵⁵

Notwithstanding the intrinsic interest of these contrasting theoretical positions, it is important to acknowledge that parliamentary opponents of the income tax were very much in the minority.⁵⁶ Only William Smith and George Tierney voted against the third reading of the income tax bill and in the Lords the legislation was approved without division.⁵⁷ MPs did not engage particularly closely with individual items in Pitt's statement of taxable income and no-one objected to Pitt's decision to exempt incomes below £60 p.a.

Outside parliament, by contrast, Pitt's income statement quickly attracted attention. Pitt's speech was widely reported in the newspaper press.⁵⁸ Just under two months after the income tax act received the royal assent, Pitt's Treasury Secretary, George Rose, published a pamphlet that tabulated

⁵⁰ *PH*, xxxiv. 24-5. Cf. Sir James Steuart, *An inquiry into the principles of political oeconomy: being an essay on the science of domestic policy in free nations* (2 vols, London, 1767), ii. p. 541.

⁵¹ *PH*, xxxiv. 96; 140-1.

⁵² *PH*, xxxiv. 100.

⁵³ *PR* (1896-1802), vii. p. 265.

⁵⁴ *PH*, xxxiv. 103.

⁵⁵ *PR* (1796-1802), vii. p. 456.

⁵⁶ For a more detailed discussion, see Thompson, 'Census-taking', pp. 85-92.

⁵⁷ *PH*, xxxiv. 148; *PR* (1796-1802), vii. p. 574.

⁵⁸ See, *inter alia*, *Evening Mail*, 3-5 Dec. 1798, p. 2, col. c; *Morning Chronicle*, 4 Dec. 1798, p. 2, col. c; *Morning Post and Gazetteer*, 4 Dec. 1798, p. 3, col. a; *Star*, 4 Dec. 1798, p. 2, col. d; *Times*, 4 Dec. 1798, p. 2, col. c; *London Packet or New Lloyd's Evening Post*, 3-5 Dec. 1798, p. 1, col. c; *Morning Herald*, 4 Dec. 1798, p. 2, col. b; *Lloyd's Evening Post*, 3-5 Dec. 1798, p. 540, col. a; *Oracle and Daily Advertiser*, 4 Dec. 1798, p. 2, col. d; *Sun*, 4 Dec. 1798, p. 3, col. a; *True Briton*, 4 Dec. 1798, p. 3, col. a.

the different categories of taxable income.⁵⁹ Rose promised his readers ‘a review ... of the means by which, during a war the most eventful, and necessarily the most expensive, in which the nation was ever engaged, she has been able to preserve her credit unimpaired, to provide for the exigencies of that war, and to look forward with confidence to a provision for future contingencies’.⁶⁰ According to Rose, the ‘ruling principle of the ways and means of late years’ was that ‘the great body of the people, those inferior ranks from whose labour and industry the wealth of country is chiefly derived’ should be spared from taxes as far as possible. ‘This principle’, Rose noted, had been ‘particularly attended to in the great measure of raising 10 per cent. on income’.⁶¹

Rose even went so far as to claim that the income tax was a measure ‘frequently contemplated by theorists in political economy’ but which ‘they had scarcely ventured to hope for its actual adoption in a country already burdened so heavily as ours, where it might be supposed fatal to the popularity of the minister who should propose it, and adverse to the immediate interests of the people whom it was to affect.’⁶² Rose was claiming, in other words, that political economists backed the income tax in theory, but assumed no government would be bold enough to introduce it in practice for fear of becoming unpopular. Interestingly, Rose chose not to mention any specific political economists who held this position. Given that William Smith had explicitly condemned the government’s proposal on the grounds that it was *incompatible* with the doctrines of political economy (only to be told that by Pitt that this was ‘light flippant theory’), Rose’s comments suggest the government’s attitude towards ‘political economy’ was highly ambivalent, if not deliberately disingenuous.

Benjamin Bell and Henry Beeke published their own thoughts on the income tax shortly after Rose’s pamphlet had appeared.⁶³ While neither were particularly well-known political economists, then or now, their alternative national income estimates were by far the most sophisticated to be published in response to Pitt’s speech. As I noted above, Phyllis Deane initially used Bell and Beeke to try to get a handle on the pattern of long-term economic growth in eighteenth-century England.⁶⁴ Since her principal aim was to track change over time, it was necessary to reconcile the various different national income estimates that appeared *c.* 1800. As a result, Deane tended to downplay differences of opinion.

⁵⁹ [George Rose], *A brief examination into the increase of the revenue, commerce, and manufactures of Great Britain, from 1792 to 1799* (London, 1799), appendix 7; for date of publication, see *Morning Chronicle*, 7 March 1799, p. 2.

⁶⁰ [Rose], *Brief examination* (5th edn, London, 1799), p. 5.

⁶¹ *Ibid.*, p. 33.

⁶² *Ibid.*, pp. 29-30.

⁶³ Bell published *Three essays, on taxation of income* on 18 April 1799 (*London Chronicle*, 18-20 April, p. 4); Beeke’s *Observations* appeared on 18 June 1799 (*Oracle and Daily Advertiser*, 18 June 1799, p. 2).

⁶⁴ See above, pp. 4-5, 7.

Table 2: Deane's presentation of national income c. 1800, derived from contemporary estimates.

	Pitt's estimate of assessable income	Beeke's estimate of "clear" national income	Bell's estimate for incomes over £15	Deane's 'consensus'
1. Landlords' rents	25	20	40	30.2
2. Tenants' profits	19	15	35	22.6
3. Tithes	5	2.5	4	6.6
4. Mines, inland navigation, and timber	3	4.5	5	4.5
5. Houses	6	10	4	8.2
6. Professions	2	2	3	[inc. in tithes]
7. Proportion for Scotland	5	8.5	allocated	not est.
8. Incomes from property abroad	5	4	5	5
9. Profits on foreign trade and shipping	12	10	12	[inc. in home trade]
10. Profits on home trade	28	16.2	33	32.6
11. Miscellaneous labour incomes	not est.	97	75	81.5
12. Interest	not est.	not est.	10	9
13. National debt interest	15	15	17	[not est.]
14. TOTALS	125	204.2	243	200.2

Source: Tables 5 and 6 in Deane, 'Implications', pp. 28-9.

Based on this tabulation of the income statements of Pitt, Beeke and Bell, Deane identified 'three major differences between Bell's estimates and those of his contemporaries.' These were: the much higher value of agricultural incomes (i.e. rents and farmers' profits); Bell's inclusion of interest on 'money in bonds and bills including capital in banks'; and a lower value for house rents.⁶⁵ While it is easy to agree with Deane that Bell was indeed optimistic about the value of agricultural incomes – he reckoned rents and profits taken together amounted to £75 million, or more than twice the value assumed by Beeke – it is not at all clear why Bell's inclusion of interest, or his lower estimate for house rents, should be regarded as particularly significant differences. Far more striking, I would suggest, is the difference of opinion over miscellaneous labour incomes. There is a £22 million gap between Beeke's estimate (£97 million) and Bell's (£75 million) that simply dwarfs any differences arising from Bell's inclusion of interest (£10 million), and his lower value for house rents (£4 million). Moreover, Deane had already reduced Beeke's labour income estimate by £13 million for the purposes of this tabulation on the grounds that Beeke overstated the population of England and Wales. Consequently, the gap between Beeke and Bell was considerably larger than Deane's table implies, at around £35 million. Beeke's much higher estimate of labour income therefore cancels out Bell's much higher estimate of land rents and farmers' profits.

According to Deane, however, 'the difference between Bell's estimate of £75 million for miscellaneous labour incomes and Beeke's of £97 million is not significant in view of the fact that the former explicitly excludes incomes under £15 per annum and the latter even includes poor relief payments.'⁶⁶ Yet this claim does not bear sustained scrutiny. Even if Bell had included incomes

⁶⁵ Deane, 'Implications', p. 27.

⁶⁶ Deane, 'Implications', p. 28.

below £15, his estimate of total labour income would still have fallen short of Beeke's. To appreciate why, we need to consider how Beeke and Bell approached the problem of estimating labour income.

Although both writers adopted the standard late seventeenth-century procedure of multiplying average earnings by total population, there were important differences in their treatment of population. Benjamin Bell freely admitted that 'the population of Great Britain is not accurately known' but decided not to waste any space assessing the validity of different estimates. Instead, he claimed that 'few will doubt of its amounting to ten millions', despite offering no evidence, and citing no published authorities, to support this figure.⁶⁷ To estimate labour income, Bell divided total population into twentieths and proposed the following rudimentary income distribution, modified slightly in 1802:

Table 3: Bell's table of income distribution

	1799 Population (million)	1802 Population (million)
Rendered unfit for work by age	1.5	1
Children	2	2
Army and navy	0.5	0.5
Paupers	0.5	1
< £15 p.a.	2.5	2
£15 - £60	2	2.5
> £60	1	1
TOTAL	10	10

Source: Bell, *Three essays*, pp. 69-70 ;Bell, *Essays on agriculture*, pp. 134-5.

In 1799 Bell multiplied the number of people in the £15-£60 income bracket (2 million) by a putative average annual income of £35. This produced a total labour income figure of £70 million. Two years later, after adding an additional 0.5 million people to this particular income bracket, Bell lowered the average annual income to £30, to give a total labour income figure of £75 million. By applying the same procedure to the income bracket that Bell omitted – namely earnings under £15 – it is possible to establish an upper bound for labour income of around £91 million.⁶⁸ This is still some £20 million short of Beeke's (uncorrected) £110 million total. Indeed, the only way Bell could have come close to Beeke's total would have been if Bell assumed that the 2-2.5 million people earning less than £15 per annum actually earned exactly £15. Even allowing for a further 0.5-1 million people in receipt of poor relief incomes, it is hard to see how Bell's labour income estimate could have reached much more than £100 million.

⁶⁷ Bell, *Three essays*, p. 69. Bell did not modify this population total in the revised edition that appeared in early 1802. The Scottish census returns were due until November 1801 and were not ordered to be printed until 9 June 1802.

⁶⁸ Using Bell's 1802 figures and assuming that the average income for this group was £8: 2 million x £8 = £16 million.

Henry Beeke went to considerably greater lengths than Bell to establish the credibility of his population estimate. A year earlier, in 1798, Beeke had published a pamphlet entitled *Letter to a county member*. Beeke argued that elsewhere in Europe, ‘the science of political arithmetic has been employed in giving as advantageous a representation as possible, of the population and other internal circumstances upon which the strength of nations must ultimately depend’. In Britain, by contrast, ‘we have not infrequently talked as if our national existence, no less than our naval superiority, depended on the single circumstance of our commerce’.⁶⁹ One important function of Beeke’s *Letter* was to provide an accurate account of Britain’s ‘internal resources’ since these alone, Beeke argued, placed her ‘among the greatest nations in Europe’.⁷⁰

In an extensive appendix, Beeke attempted to prove that the population of the Britain and Ireland ‘is very moderately computed at seventeen millions’, or ‘at least twice as great as it has been represented by very ingenious writers, whose opinions are relied on with almost implicit confidence by our enemies’.⁷¹ He employed three complementary approaches to do this. First, he used Eden’s *State of the poor* (1797) to calculate ratios of acres per inhabitant for a few dozen rural parishes. From this exercise he deduced that there were, on average, 4.25 acres per rural inhabitant and therefore around 7.5 million people living in the countryside (assuming a cultivated acreage of 32 million acres). Beeke lacked direct evidence on the size of the urban share of population, but thought that ‘towns certainly contain 3,500,000, and probably almost 4,000,000 of inhabitants’.⁷² Beeke’s second method of estimation involved using militia lists to discover the ratio of balloted men to population. On the basis of Berkshire evidence, Beeke concluded that the total population of England and Wales must lie between 9.9 million and 11 million. Finally, Beeke reviewed the ratio of assessed to non-assessed houses in different parts of the country (including Leeds), noting that commentators who argued for a declining population on the basis of house tax returns had failed to notice the long-term increase in the proportion of non-assessed houses. According to Beeke, changes in land tenure had reduced many houses ‘to the state of cottages’. At the same time, ‘small farmers and petty leaseholders’ had all but vanished and had been replaced by labourers.⁷³ Beeke was therefore satisfied that there were at least 2 million houses in England and Wales. Despite these various empirical labours, Beeke provided no data on Scotland and Ireland. Instead, he simply stated that ‘the population of Ireland is clearly ascertained to be about four millions; and that of Scotland cannot be less than two millions and a half’, giving a grand total of 17.5 million inhabitants for Britain and Ireland.⁷⁴

⁶⁹ [Henry Beeke], *Letter to a county member, on the means of securing a safe and honourable peace* (London, 1798), p. 5.

⁷⁰ *Ibid.*, p. 7.

⁷¹ *Ibid.* pp. 69, 78.

⁷² *Ibid.*, pp. 69-73.

⁷³ *Ibid.* p. 74.

⁷⁴ *Ibid.*, p. 78.

In the first edition of his *Observations on the produce of the income tax*, Beeke used his previously published population estimate for England and Wales as the basis for estimating labour income.⁷⁵ Indeed, Beeke even claimed that he had ‘since collected a considerable body of evidence, which when properly examined, uniformly confirms my assertion, that the population of England and Wales is really not less than 11,000,000’.⁷⁶ Unlike Bell, however, Beeke preferred to think in terms of the number of families, rather than the number of individuals, when calculating labour income. This made sense because tax office returns generally reported the number of households assessed at different rates.⁷⁷ Beeke assumed that any household that paid the assessed taxes would also be liable for Pitt’s income tax, and would therefore be unlikely to include wage-earners. Given that around 700,000 households were assessed, Beeke estimated that there were a further 1.5 million households that were not assessed (assuming 5 persons per family) in England and Wales.⁷⁸ So whereas Bell’s approach had been to divide the population up into dependents and non-dependents before estimating the income of the latter, Beeke adopted a less sophisticated approach. He simply multiplied the number of wage-earning households by an average wage of £45. This produced a labour income total of £67.5 million. Beeke added to this the wages of the ‘immense number of domestics ... servants in husbandry, shopmen, clerks &c. &c.’ employed in the remaining 700,000 families. Allowing £45 in wages for only 500,000 of this number, Beeke raised his estimate of labour income to £90 million (i.e. 2 million families x £45). Beeke thought the population of Scotland was around one-seventh of the total for England and Wales (which implied a reduction of around 1 million people from his previous estimate of 2.5 million). However, since ‘wages in Scotland are much lower than in England’, Beeke decided to allow ‘one ninth of its amount in England and Wales’, that is, £10 million.⁷⁹

In the second edition, published a year later, Beeke raised the value of labour income by an additional £10 million on the grounds that *all* 2.2 million families earned at least £45 in wages, thereby increasing the total for England and Wales to £99 million. This in turn increased Scottish wages by £1 million, and thus Beeke was able to reach a labour income total of £110 million.⁸⁰ What this discussion reveals is that, *contra* Deane, the difference between Bell’s 1802 labour income estimate of £75 million and Beeke’s 1800 estimate of £110 million is significant in at least two ways. The first difference is that Bell and Beeke differed on the issue of total population. Beeke thought the British population was just over 25 per cent larger than Bell’s more modest estimate of 10 million inhabitants. This surely constitutes a significant difference. Deane of course recognised this, which is

⁷⁵ Beeke, *Observations* [1799], p. 40.

⁷⁶ *Ibid.*, p. 41.

⁷⁷ See, for example, ‘An Account of the Number of Persons who pay the Assessed Taxes’, 27 November 1797, which, despite its title, enumerates households: Sheila Lambert (ed.), *House of Commons Sessional Papers of the Eighteenth Century* (147 vols, Wilmington, Delaware, 1975-), cxvii. p. 25. This account was tabled by Pitt in connection with the Triple Assessment.

⁷⁸ In fact, the number of households liable for the assessed taxes was nearer 800,000.

⁷⁹ Beeke, *Observations* [1799], pp.42-6.

⁸⁰ Beeke, *Observations* [1800], pp.126-7.

why she ‘corrected’ Beeke’s labour income estimate downwards in her own tabulation of Pitt, Bell and Beeke. Secondly, irrespective of Bell’s exclusion of incomes under £15 from his estimate, he was considerably more pessimistic about the value of average wages than Beeke. Indeed, had Bell included incomes under £15, the effect of this would have been to *lower* average wages even further below Beeke’s putative figure of £45 per household.⁸¹ Subtracting Beeke’s allowance of £2 per household in poor relief makes only a small dent in the £10-15 discrepancy between the two writers’ average wage figures.⁸² The £35 million difference between Bell’s labour income estimate and Beeke’s was thus largely a consequence of their fundamental disagreement on population size (i.e. labour inputs) and average wages. To put it in relative terms: Beeke’s figures implied that wages constituted 51 per cent of national income, compared to only 31 per cent according to Bell. Instead of acknowledging the magnitude of this disagreement, Deane split the difference. In her amalgamation of Pitt, Bell and Beeke, Deane assumed employment income contributed 41 per cent of national income.⁸³

The broader purpose of this discussion is to emphasise the fragility of late eighteenth-century national income estimates. In this respect, at least, Bell and Beeke operated within broadly the same parameters of uncertainty as their late seventeenth-century predecessors. Although neither Bell nor Beeke attempted to infer national income from national expenditure, as Petty had done in ‘*Verbum sapienti*’, establishing a robust estimate of labour income – by far the largest single item in seventeenth- and eighteenth-century income statements – remained an intractable problem. Far more intractable, I would suggest, than establishing robust estimates of rental income. Although there had been significant cartographic improvements over the course of the eighteenth century, ably exploited by Beeke in his discussion of total acreage and rental income, the same cannot really be said for contemporary knowledge of either population size or wage rates.⁸⁴ To be sure, plenty of commentators, including social investigators such as Sir Frederic Morton Eden, Sir John Sinclair and Arthur Young, worked hard to generate better demographic data in the late eighteenth century, but consensus proved elusive.

As the preceding discussion of labour income has indicated, Deane’s solution was to try to create consensus where it did not exist. This was because her interest lay in describing long-term patterns of economic growth and changing living standards. Benjamin Bell and Henry Beeke had very different priorities, however. They were certainly interested in living standards and income distribution, but

⁸¹ It would also have raised Bell’s estimate of total national income, doing nothing to reduce the overall difference between the two writers’ estimates.

⁸² For the value of poor relief see Beeke, *Observations* [1799], p. 43.

⁸³ Derived from table 2, above.

⁸⁴ For Beeke’s review of the acreage evidence, see *Observations* [1799], pp. 5-14; *Observations* [1800], pp. 6-19. Beeke produced new estimates of the total number of acres in England and Wales, broken down by county. Beeke found that there were 38,498,572 acres, some 1.5 million acres below the Board of Agriculture estimate which Pitt had relied upon in his Budget speech.

principally because of what these might mean for *current* and *future* tax revenues. Historical comparison was not a priority. Instead, Bell and Beeke used national accounting procedures to challenge Pitt's revenue forecasts and to offer alternative policy proposals.

Benjamin Bell welcomed Pitt's proposal to tax income but argued that it not go far enough. He called on Pitt to 'let all assessments be levied more equally ... by placing them entirely on income, and not on articles of consumption, and proportionally more on those who are highly opulent than on the middle or lower orders of the people.'⁸⁵ Bell was particularly critical of the new tax's exemption of incomes under £60 because, he claimed, 'a very considerable part of the national wealth will yield nothing'. He rejected the view that 'people in the lower stations of life' could not afford to contribute a portion of their incomes, noting that 'in the course even of these last two years, the situation of manufacturers and labourers ... has been greatly meliorated, by their wages having risen in a proportion far above that of the necessaries of life'.⁸⁶ Echoing some of the 'middle class' grievances of the previous year's Triple Assessment debate, Bell suggested that the rising price of labour was caused by 'too great a proportion of the national wealth [being] amassed by a small proportion of the community, who are thereby enable to pay such high prices for the labour of all whom they employ'. As a result, the 'middle ranks of society are deprived of many of those comforts to which they had hitherto been accustomed'.⁸⁷

Bell's national income statement needs to be understood in light of these prior claims. Because Bell wanted the government to abolish all consumption taxes, his estimate of national income needed to be sufficiently large to yield annually 'the sum of twenty-six millions ... without any particular act of severity being committed on any one class of the community'.⁸⁸ On the whole, Bell tended to inflate each of the items in Pitt's income statement.⁸⁹ Excluding labour income, Bell's 1802 income total was around one-third larger than Pitt's, at £168 million. This had important implications for the potential yield of the income tax. Bell argued that by levying a tax rate of 1/8th on incomes above £60, £21 million could be raised in revenue. If a tax rate of 1/15th was applied to incomes below £60, a further £5 million might be extracted to produce a combined total of £26 million.⁹⁰ Not only would this sum cover the whole 'yearly expence of a war establishment' (estimated at £20 million), but there would also be £6 million remaining for the improvement of agriculture.⁹¹ Bell's estimates were purposefully optimistic because of his support for a universal income tax. He had to persuade his

⁸⁵ [Bell], *Three essays*, p. 7.

⁸⁶ *Ibid.* p. 55.

⁸⁷ *Ibid.* pp. 41-2. Cf. Dror Wahrman, *Imagining the middle class: the political representation of class in Britain, c. 1780-1840* (Cambridge, 1995), ch. 4, in which it is argued that the triple assessment debate was integral to the emergence of middle class ideology and language.

⁸⁸ Bell, *Essays on agriculture*, p. 149.

⁸⁹ Only tithes and house rents had lower values than Pitt's estimates in Bell's 1802 revision (p. 143). Bell even suggested that 'if ultimately it [his estimate] proves to be wrong ... the error will be found to consist in its being too low' (pp. 143-4).

⁹⁰ Bell, *Essays*, pp. 143-8.

⁹¹ *Ibid.*, p. 151.

readers that his proposal to abolish consumption taxes would not bankrupt the state. To do this, he inflated Pitt's income estimates just enough to ensure that a 10 per cent tax on national income would cover the whole of the annual public expenditure. Just as Pitt's taxable income total was largely determined by a pre-existing revenue gap that needed to be filled, much the same can be said of Bell's considerably larger national income total.

Henry Beeke was also sceptical of Pitt's income figures, but for different reasons. Bell had argued repeatedly for higher levels of agricultural investment on the grounds that improvement was the 'only solid foundation of that strength, and security, which are essential to the prosperity and greatness of an independent kingdom'.⁹² Beeke, on the other hand, challenged 'the *whole fabric* of our present multiplied speculations on the agricultural economy of the country, which has been so ingeniously adapted to an unsubstantial foundation'. More particularly, he blamed John Middleton's *View of the agriculture of Middlesex* – which Pitt had used as the basis for his claim that the country contained 40 million acres under cultivation – for perpetuating such speculative claims.⁹³ Since Beeke assumed a cultivated acreage of only 33 million acres, his estimate of rents and farmers' profits was proportionately lower than Pitt's. Whereas Bell tended to inflate Pitt's income figures, Beeke did the reverse.⁹⁴ Consequently, Beeke's income total, excluding wages, was 14 per cent lower than Pitt's. In general, Beeke was far more pessimistic about the revenue potential of the income tax. He argued that the tax would produce no more than £6.5 million in its present form.⁹⁵ The explanation for this, Beeke suggested, was that 'more than two thirds' of the 'whole income of Great Britain' was exempt, either because it took the form of wages, or because of the various abatements built into the assessment by Pitt.⁹⁶ The much higher share of national income which Beeke attributed to labour (51 per cent) reflected his belief that 'the wealth of Great Britain is far more equally divided than has commonly been supposed'.⁹⁷ By contrast, Bell appeared to believe that an income tax was both necessary and desirable precisely because 'the more opulent part of the nation ... seldom have either time or desire to live up to their amount of income'.⁹⁸ Moreover, Bell insisted, the incomes of the middle ranks of society were being squeezed by a combination of rising labour costs, consumption taxes and the concentration of wealth at the top of the income scale.⁹⁹ Thus it would appear that in addition to disagreeing over the size of the labour force and the average wage rate, Beeke and Bell also differed on the question of income distribution.

⁹² Bell, *Essays*, p. iii.

⁹³ Beeke, *Observations* [1800], p. 18.

⁹⁴ Beeke's estimates of rents, farmers' profits, tithes, foreign incomes, foreign trade profit and home trade profit were all lower than Pitt's.

⁹⁵ Beeke, *Observations* [1800], p. 133.

⁹⁶ *Ibid.*, p. 137.

⁹⁷ *Ibid.*, p. 139.

⁹⁸ Bell, *Essays*, p. 58.

⁹⁹ *Ibid.*, pp. 65, 132.

According to Beeke, the division of property approximated to an ‘arithmetical progression’. Unlike Petty’s arithmetic progression, Beeke did not think income rose in constant increments, but rather the number of persons in each income class, from richest to poorest.¹⁰⁰ The reason for this, Beeke argued, was that ‘there exist certain *natural* and *moral* causes which are always actively tending to produce it’, principally ‘unequal ability and diligence in acquiring property – unequal produce and success in preserving it – unequal numbers inheriting it’.¹⁰¹ It hardly needs to be said that Beeke provided no evidence to substantiate these claims: the purpose of this particular piece of speculative political arithmetic was to prove that the income tax yield would be disappointing because Pitt had allowed too many abatements between £60 and £200.¹⁰²

Interestingly, Beeke appears to have changed his mind about long-term trends in income inequality. As I noted above, in *Letter to a county member*, Beeke had argued that ‘small farmers and petty leaseholders’ had all but disappeared owing to eighteenth-century changes in land tenure (i.e. enclosure).¹⁰³ As a result, the proportion of assessed houses to non-assessed cottages had shifted in favour of the latter. This was how Beeke attempted to reconcile his extremely optimistic population estimate with the more ambivalent evidence derived from tax office returns. For Beeke, proletarianization and population growth were complementary, rather than antagonistic, processes. Two years later, however, we find Beeke arguing that the income differences between landlords and their tenants and labourers ‘is very much less at present than it was at the close of the last century’.¹⁰⁴ It is hard to see how these two positions can be squared with one another. In the former work, Beeke appears to be saying that the middling ranks, at least in rural England, have all but vanished, while in the latter he is arguing for a more equal distribution of income than generally assumed, and a narrowing of the income gap between landlords and tenants/labourers over the course of the eighteenth century.

IV

By way of conclusion, I want to draw out the significance of these findings in terms of three different historiographical perspectives. First, from the point of view of historical national accounts, it might be thought that this paper adds little to our understanding of British GDP at the close of the eighteenth century. After all, Deane used contemporary national income estimates simply as a gateway for thinking about long-run economic change in the eighteenth century, and quickly devised her own, less fragile, output figures based on various official data sources. More recently, Crafts and Harley have re-worked the Deane and Cole findings in light of subsequent advances in historical knowledge. Nonetheless, contemporary estimates still exert a substantial pull on the economic historian looking

¹⁰⁰ Beeke, *Observations* [1800], p. 140; for Petty see p. 10, above.

¹⁰¹ *Ibid.*, p. 141.

¹⁰² *Ibid.*, pp. 155-62.

¹⁰³ See above, p. 17.

¹⁰⁴ Beeke, *Observations* [1800], p. 148.

for a hook on which to hang modern research.¹⁰⁵ Limitations of space have prevented a fuller discussion of Patrick Colquhoun's estimates, but his social table, albeit in amended form, is built into modern national accounts for this period. While Lindert and Williamson were correct in stating that Colquhoun's work 'provides more occupational detail' than Beeke's, there is little evidence to suggest that this 'detail' was based on anything other than speculation.¹⁰⁶ Colquhoun did use the 1801 census and the 1802-3 poor law returns, but only to provide initial parameters for total population and the total number of people in receipt of relief. Neither of these data sources provided anything like the occupational detail that Colquhoun needed, or published.¹⁰⁷

Secondly, historians of economic thought, as well as historians of political arithmetic and social statistics, have tended to see the eighteenth century as something of an empirical wasteland.¹⁰⁸ As I noted earlier in the paper, the origins of this view can be traced back to J. R. McCulloch's highly critical comments on the alleged non-existence of 'statistical science' 'during the long interval between Sir William Petty and Dr Beeke'. McCulloch's comment is perhaps more revealing than has hitherto been appreciated, however. His choice of Petty and Beeke as 'book ends' suggests that McCulloch had little respect for Gregory King or Joseph Massie. We have already seen how scornful McCulloch was of Patrick Colquhoun.¹⁰⁹ This contrasts sharply with the views of modern economic historians, who have generally preferred King, Massie and Colquhoun to Petty and Beeke. This probably reflects the modern economic historian's appetite for data, as contrasted with McCulloch's more Ricardian, deductive biases. More broadly, McCulloch's comment may have simply been misinterpreted. His choice of Petty and Beeke suggests that 'statistical science' should be understood as referring to what we would think of as national accounting, rather than statistics more broadly conceived.

Finally, this paper tells us something about the relationship between political arithmetic and the state. Although contemporary national income estimates have most often been studied by economic historians interested in long-run economic change, the political arithmeticians who drew them up were nearly always driven by short-term political and fiscal considerations. As Slack has emphasised, in the late seventeenth century 'taxes and political arithmetic went hand in hand'.¹¹⁰ This remained just as true a century later. We might, however, add a third factor to this partnership, namely, war. In both the late seventeenth and the late eighteenth centuries, the financial burdens of war stimulated

¹⁰⁵ See, for example, Crafts, *British economic growth*, pp. 11-17; Broadberry *et al*, 'British economic growth, 1270-1870' [<http://www2.warwick.ac.uk/fac/soc/economics/staff/academic/broadberry/wp/britishgdplongrun8a.pdf>], pp. 4, 22.

¹⁰⁶ See n. 15, above.

¹⁰⁷ See Thompson, 'Census-taking', pp. 119-26.

¹⁰⁸ E.g. Schumpeter, *History of economic analysis*, p. 211; T. Hutchison, *Before Adam Smith: the emergence of political economy, 1662-1776* (Oxford, 1988), p. 54; William S. Letwin, *The origins of scientific economics: English economic thought, 1660-1776* (London, 1963), p. 140.

¹⁰⁹ Above, pp. 5-6.

¹¹⁰ Slack, 'Measuring', p. 608.

new ways of thinking about national wealth, and more importantly, new fiscal measures for extracting it. Arguably, extraction was more important than measurement. This may explain why it was that so little progress was made in establishing better data on either the cultivated acreage or the population of England and Wales during the eighteenth century. As a result of this empirical inertia, Beeke and Bell presented strikingly different pictures of the structure of national income in 1799. By effacing these differences Deane gave the somewhat misleading impression that late eighteenth-century national accounting procedures were more rigorous than was really the case. As I have tried to indicate, the methods employed by Pitt, Bell and Beeke were no more sophisticated than those of Petty, King and Davenant, depending heavily on crude averages.

Nonetheless, the late eighteenth-century debate on national income did have long-term consequences for the creation of official economic knowledge. Although national income estimates did not become embedded within policy-making, the British state undertook the first national census in 1801 and conducted a national crop survey in the same year. For a century or more, uncertainty about population and acreage under cultivation had hampered progress in political arithmetic. In the first decade of the nineteenth century, the kind of economic and social structural data that Petty could only dream of was collected by the state on an unprecedented scale. Ironically, though, much of this quantitative information was the consequence of policy change, rather than the cause of it. Political arithmetic, meanwhile, had ceased to be at the cutting edge of economic thought and policy, having been supplanted by the free trade doctrines of Smith and Ricardo.