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**MONEY, WAGES, AND REAL INCOMES IN THE AGE OF ERASMUS:**

**The Purchasing Power of Coins and of Building Craftsmen's Wages in England  
and the Low Countries, 1500 - 1540**

by

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## **Money, Wages, and Real Incomes in the Age of Erasmus: The Purchasing Power of Coins and of Building Craftsmen's Wages in England and the Low Countries, 1500 - 1540**

### **Abstract:**

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This comparative study of money, coinages, prices, and wages in southern England and the southern Low Countries had its origins in a series of appendices and footnotes for the first twelve volumes of the *Correspondence of Erasmus* (1484-1527), part of the *Collected Works of Erasmus*, which the University of Toronto Press has been publishing since 1974. The questions first put to me were: can we identify and evaluate the various silver and gold coins that appear in Erasmus's correspondence, and references to his travels over an arc running from England, the Habsburg Netherlands, France, the Rhineland, Switzerland, and Italy? What were these coins in terms of their precious metal contents and exchange rates, with each other, and in relation to the moneys of account of England, France, and the Low Countries? The more economically interesting questions that developed were: (1) What was the purchasing power of these various coins in terms of everyday commodities? (2) What was the real value of the various benefices and stipends that Erasmus received from his benefactors: was he really so ill-paid, as he frequently intimated? (3) How would his 'standard of living' compare with that of skilled master craftsmen – a mason or carpenter in Oxford and in Antwerp of this era - at least in terms of the purchasing powers of their money incomes?

This study covers the Golden Age of Erasmus (1466-1536) in the first four decades of the sixteenth century, an era that also marked the onset of the famous Price Revolution, perhaps the most significant inflationary era in European economic history. It commences with an analysis of the original sources for the price and wage data utilized in this study, and the problem of 'wage stickiness', so that real wages were essentially a function of changes in the price level (rather than in the MRP of the craftsmen). The next part analyses the nature of relative price changes and of inflation during the first decades of the Price Revolution era, discussing the role of both demographic and monetary changes, but offering essentially a monetary explanation of that inflation. Then follows detailed analyses of the actual changes in the gold and silver coinages of England, France, and the Habsburg Netherlands from 1500 to 1540; changes in the coined money supplies and changes in credit, with the origins of a genuine financial revolution in the early 16<sup>th</sup>-century Netherlands. The rest of this paper focusses on the purchasing power of both coins and of building craftsmen's wages in England and the southern Netherlands over this four-decade period, in terms of the following commodities: wine, butter, beef, herrings, cod fish, eggs, wheat, peas, loaf sugar, paper, tallow candles, woollen, worsted, and linen textiles. For both regions, various estimates of these craftsmen's real wages and real incomes are made: in terms of these commodities and of a more broadly based 'basket of consumables'; and of the price indices derived from them for Brabant (Van der Wee) and England (Phelps Brown and Hopkins, as amended by my own research on their working papers in the LSE Archives). The comparative purchasing power of these wages is made for similar commodities in each region, estimating for which the English craftsmen was the gainer or loser in relation to his counterparts in the Antwerp-Lier-Brussels region. If English craftsmen, suffering a greater degree of wage-stickiness, thus suffered a greater fall in real incomes with the onset of the Price Revolution, they were not necessarily worse off in absolute terms by the late 1530s.

The final table 17 compares their incomes with those of Erasmus, in terms of references to his various stipends and benefices mentioned in his correspondence for the year 1526, a tabulation that is far from complete. But that tabulation indicates that these incomes – when Erasmus had been a Professor of Greek and Divinity at Cambridge – amounted to the annual wage incomes for 82 Antwerp master masons and carpenters or 93 Oxford masons/carpenters. Today senior professors at the University of Toronto earn about 2.5 times the annual wage incomes of master carpenters. A very golden age for Erasmus indeed.

**JEL Classifications:** B0, E3, E4, E5, E6, F2, F4, J1, J2, J3, J4, J6, N1, N3, N4, N7, Q1

## MONEY, WAGES, AND REAL INCOMES IN THE AGE OF ERASMUS:

### The Purchasing Power of Coins and of Building Craftsmen's Wages in England and the Low Countries, 1500 - 1540

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#### HISTORICAL INTRODUCTION

##### The problem of comparative purchasing powers of coins and wages and the data sources

Those reading the voluminous correspondence of Erasmus over his lifetime (1466-1536), especially from the 1490s to the late 1530s, soon become aware of the wide variety of coins and other forms of money that Erasmus used on his far-ranging travels, from his homeland in the Burgundian-Habsburg Netherlands, to England, France, the Rhineland, Southern Germany, Switzerland, and Italy. Three major questions readily come to mind: (1) What were the values of these coins – what was their purchasing power in terms of everyday commodities? (2) What was the real value of the various benefices and stipends that Erasmus received from his benefactors: was he really so ill-paid, as he frequently intimated? (3) How would his 'standard of living', in so far as it may be deduced, compare with that of a skilled master craftsman – a mason or carpenter – in this era, at least in terms of the purchasing powers of their money incomes?

An initial attempt to answer some of these questions on money and incomes was presented, at the very outset of the project to present Erasmus' correspondence in English, more than 25 years ago, in appendices for the first two volumes of *The Collected Works of Erasmus: Correspondence [CWE]*, covering the years 1484 to 1514, which the University of Toronto Press published in 1974-75.<sup>1</sup> This present study

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<sup>1</sup> John Munro, 'Money and Coinage of the Age of Erasmus,' in Sir Roger Mynors, Douglas Thomson, and Wallace Ferguson, eds., *The Correspondence of Erasmus*, Vol. 1: *Letters 1 to 151, A.D. 1484 - 1500* (Toronto, 1974), pp. 311-48; John Munro, 'The Purchasing Power of Coins and of Wages in the Low Countries and England, 1500 - 1514,' in Sir Roger Mynors, Douglas Thomson, and Wallace Ferguson, eds., *The Correspondence of Erasmus*, Vol. 2: *Letters 142 to 297, A.D. 1501 - 1514* (Toronto, 1975), pp. 307-45; and see also John Munro, 'Money and Coinage of the Age of Erasmus': Appendix A, on 'The Coinage of the Burgundian-Habsburg Netherlands, Before and After 1521'; Appendix B: 'Official Coinage Rates: February and August 1521,' in Sir Roger Mynors, Douglas Thomson, and Peter Bietenholz, eds., *The Collected Works of Erasmus: Correspondence*, Vol. 8: *Letters 1122 to 1251, A.D. 1520 to 1521* (Toronto, 1988), pp. 347-50.

extends this coverage to 1540, i.e. to four years beyond the death of Erasmus. It also revisits the evidence for the first fifteen years of this century by offering an expanded range of price and wage data, in the following tables, for chiefly urban centres in the southern Low Countries and southern England, 1501 - 1540. For each region, the tables have been organized to provide two more precise responses to these questions: (1) the quantity of various common commodities, chiefly foodstuffs and textiles, that could have been purchased, each year, with the primary silver and gold coinages of the region; and (2) the quantity of these same commodities that masters in the building trades – masons and carpenters – could have acquired with their daily wages, and also (for the Low Countries), with their estimated annual wage incomes. These tables differ the most markedly, from those in the prior appendices, by presenting the data entirely in metric, rather than in local (indigenous) or modern Imperial, measures, surely a mandatory consideration for an international readership at the dawn of the twenty-first century.

The principal source for the Low Countries's price and wage data - for Antwerp, Lier, Brussels – is, again, Herman Van der Wee's richly detailed study *The Growth of the Antwerp Market*, supplemented by my own archival research data on textile prices for Ghent and Mechelen. For southern England, chiefly the Oxford and Cambridge regions, the primary source is the often criticized but absolutely indispensable multi-volumed publication of James E. Thorold Rogers, *A History of Agriculture and Prices in England*.<sup>2</sup> The monetary and price-history appendix for *CWE2* offered a defence for employing Thorold Rogers's data, one that seems perfectly valid a quarter century later, all the more so since there are no comparable data available for these regions in this era, certainly not on such a continuous annual basis.<sup>3</sup>

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<sup>2</sup> Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*; II: *Interpretation*; III: *Graphs*; and James E. Thorold Rogers, *A History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793)*, Compiled Entirely From Original and Contemporaneous Records, 7 vols. (Oxford, 1866-1902), especially IV: *1401-1582* (Oxford, 1882).

<sup>3</sup> John Munro, 'The Purchasing Power of Coins and of Wages in the Low Countries and England, 1500 - 1514,' in Sir Roger Mynors, Douglas Thomson, and Wallace Ferguson, eds., *The Correspondence*

### **The analysis of wage data and the problem of ‘wage stickiness’ during the Price Revolution era**

As in the monetary appendix for *CWE 2*, the question of wages – of master craftsmen, and their purchasing power – provides the central focus for this current study, all the more so since the very early sixteenth-century marked the very end of the so-called Golden Age of the Labourer, when real-wage incomes in north-western Europe had reached an unprecedented peak. That ‘Golden Age’ was brought to an abrupt halt and then dramatically reversed by the inflationary forces of the ensuing era known as the Price Revolution (c.1520-c.1650). Even after that Price Revolution era came to an end, to allow some recovery in the real wages of English master craftsmen, during the next century c.1650 - 1750, and even after the subsequent Industrial Revolution achieved such a momentous increase in per capita output, nevertheless those ‘Golden Age’ real-wages would not again be equalled, according to most indices, until the late nineteenth century (1886).<sup>4</sup>

While the earlier Appendix in *CWE 2* presented the wage data that Thorold Rogers had extracted from the accounts of Cambridge and Oxford colleges, this current study has instead substituted the data that Sir Henry Phelps Brown and Sheila Hopkins used in their well-known, seven-century long index of real wages, for a much wider area of SW England.<sup>5</sup> While the Thorold Rogers wage data frequently show minor fluctuations, from year to year, the Phelps Brown & Hopkins series reveal a remarkable uniformity in wages: so much so that the prevailing daily wage of a master building craftsmen, in south-western England (excepting London) was a unvarying 6d sterling per day, for an astoundingly long period, from 1408 to 1535. Indeed, in the Oxford and Cambridge college accounts, that rate had prevailed as the standard wage from

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*of Erasmus*, Vol. 2: *Letters 142 to 297, A.D. 1501 - 1514* (Toronto, 1975), pp. 307-45.

<sup>4</sup> See the following note and following discussion.

<sup>5</sup> E.H. Phelps Brown and Sheila V. Hopkins, ‘Seven Centuries of Building Wages,’ *Economica*, 22 (August 1955), reprinted in E.M. Carus-Wilson, ed., *Essays in Economic History*, vol. II (London, 1962), 168-78; and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 1-13.

as early as 1363.

Certainly, as we now know, that uniformity is not any indication of imperfections or faults in the data. On the contrary, that uniformity is indicative of a much more general, more widespread behaviour of European wages in the pre-Industrial era, one that economists call ‘wage stickiness’. Thus, for example, in the cross-Channel Low Countries, with a much less stable monetary structure, the prevailing daily (summer) wage of master masons and carpenters in Mechelen was an unvarying 12d *groot* Brabant (=8d *groot* Flemish) from the Burgundian monetary unification of 1434-35 to 1490; and from 1490 to 1540, an unvarying 13.5d per day (=9d *groot* Flemish).<sup>6</sup> In the nearby Antwerp region, the prevailing daily summer wage for carpenters was 8d *groot* Brabant from 1404-05 to 1431-32, then rising to 12d *groot* by 1442, remaining at that fixed rate until 1513 (except for a temporary rise to 13.5d in the tumultuous revolt years of 1486-87); and from 1515 to 1536 that daily summer rate was fixed at 15d (=10d *groot* Flemish).<sup>7</sup>

Such a decision to choose the more uniform Phelps Brown & Hopkins wage series was not, however, a question of challenging the validity of Thorold Rogers’s data, nor, therefore, of arbitrarily ‘cherry-picking’ his data used in the rest of this study. For Thorold Rogers was perfectly accurate in compiling the annual means of his wage data, but not necessarily so well advised in his methods of presenting those data. A quarter-century of my own research on wage data in the late-medieval, early-modern Low Countries and England has convinced me that the Phelps Brown-Hopkins method of presenting wage data is the better, preferred one.

For my research indicates that in any given location, wages for building craftsmen – i.e. for master masons and carpenters, chiefly – vary both within the year and from year to year, according to the

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<sup>6</sup> Charles Verlinden, E. Scholliers, et al, eds., *Dokumenten voor de geschiedenis van prijzen en lonen in Vlaanderen en Brabant/ Documents pour l’histoire des prix et des salaires en Flandre et en Brabant*, 4 vols. (Bruges, 1959-65), vol. II. For a discussion of the differences between summer and winter wages, see below, n. 98.

<sup>7</sup> Van der Wee, *Growth of the Antwerp Market* (n. 1), vol. I: *Statistics*, Appendix 28/4, pp. 360-63; Appendix 39, pp. 457-61.

composition or mix of the labour force employed for the tasks for which such payments were tabulated. Not all masons and carpenters were paid the same wage, which varied by skill levels and seniority, or difficulty of the particular tasks. But a prosopographical approach, relating wages, year by year, to names of specific craftsmen, reveals that – apart from anomalies of unusual tasks – the same mason, once reaching a senior level in his status as master, was usually paid the very same wage year after year, for long periods of time.<sup>8</sup>

The task of research scholars therefore is to ascertain what is the *prevailing and standard* wage for senior master craftsmen (and for their labourers) for each location, year after year. Such research does show that the historical pattern of wage payments, throughout later-medieval and early-modern Western Europe, was one of wage stickiness, for often extraordinary long periods of time. Indeed, even in the eighteenth century, the father of the modern science of Economics, Adam Smith, commented as follows on this very phenomenon in his classic *Wealth of Nations*:<sup>9</sup>

The wages of labour do not in Great Britain fluctuate with the price of provisions. These vary every-where from year to year, frequently from month to month. But in many places the money price of labour remains uniformly the same, sometimes for half a century together... The high price of provisions during these ten years past [1765-75] has not in many parts of the kingdom been accompanied with any sensible rise in the money price of labour....<sup>10</sup>

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<sup>8</sup> Wage-data research in the London Guildhall Library, Archives; the Corporation of London Record Office; the Archives of the British Library of Political and Economic Science (LSE); the Algemeen Rijksarchief België, Rekenkamer (various town accounts); the *Stadsarchieven* of Brugge, Gent, Mechelen, and Leuven. As an example of a ‘compositional error’ in tabulating such wage data, consider a building project or manorial repairs employing fourteen carpenters in the year: with three senior master carpenters earning 7d sterling per day, eight ordinary master carpenters earning 6d per day and three junior, less experienced master carpenters, two earning 5d and the other 5½d per day. Their mean wage would then be 5.875d unweighted and 6.0357d weighted. If, in the following year, only ten carpenters were employed, with only one senior carpenter, earning 7d per day, six earning 6d per day, and three earning 5½d per day, the weighted mean would now be 5.950d and the unweighted mean, 6.167d. An examination of these accounts year after year would reveal that, for each class or status of master carpenters, the wage rates were in fact unchanging – and thus very sticky, with a standard or predominant wage of 6d per day.

<sup>9</sup> Adam Smith, *An Inquiry Into the Nature and Causes of the Wealth of Nations*, ed. with introduction and notes by Edwin Cannan (1<sup>st</sup> edn. London 1776; Cannan edn. New York 1937), p. 74.

<sup>10</sup> In fact, the prevailing daily wage for a master building craftsman in SW England had been 24d per day – i.e. quadruple the money wage rate of the 15<sup>th</sup> and early 16<sup>th</sup> centuries – from 1736 to 1773, just before

Similar wage stickiness is readily apparent in the following tables for craftsmen's wages, and their purchasing power in Brabant (southern Low Countries) and southern England, for the first four decades of the sixteenth century; and only in the final decade did they begin to rise (as previously indicated).<sup>11</sup> As suggested earlier, they necessarily did so, as all the following tables reveal, because the inflation that marked the onset of the Price Revolution era meant, certainly by the 1530s, a steep rise in the real cost of living, in both England and the Low Countries, i.e. as 'sticky' wages lagged behind rising prices. Only in that decade did employers respond with some increases in money wages, which, however, were both too little and too late, especially in England.

**The nature of price and wage changes during the sixteenth-century Price Revolution: monetary and demographic (real) factors in inflation**

Indeed, the onset of this Price Revolution is the pivotal feature of the West European economy in this Age of Erasmus. Most economists will contend, and justifiably so, that the Price Revolution was essentially a monetary phenomena. Indeed so are all long-term inflations – as continuous and sustained rises in the price level, as opposed to momentary, temporary price shocks. They are brought about by increases in the stock of money circulating in the economy, or by an increased velocity or flow of such money; or, most commonly, by some combination of increased stocks and flows. If, however, these monetary forces, perhaps in combination with other so-called 'real' factors, helped to stimulate economic growth, the consequent expansion in the output of goods and services usually moderated the degree of inflation, or even fully

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the publication of the *Wealth of Nations*. By its publication date, that prevailing wage rate had risen to 29d, where it would remain until 1792, with the onset of severe inflation during the French Revolutionary-Napoleonic Wars. See Phelps Brown and Hopkins, 'Seven Centuries of Wages (n. 5)', p. 11 (29d., rising to 36d, in 1791-96).

<sup>11</sup> For a discussion of the problems and forms of 'wage stickiness' in this era, see <http://www.economics.utoronto.ca/ecipa/archive/UT-ECIPA-MUNRO-00-03.html> [working paper: *Wage Stickiness, Monetary Changes, and Real Incomes in Late-Medieval England and the Low Countries, 1300-1470: Did Money Really Matter?*]



counteracted it, so that few prices would have risen under these circumstances.<sup>12</sup>

Many historians, however, strongly disagree by contending that inflations were instead fundamentally due to demographic factors: in particular, to an inexorable rise in population.<sup>13</sup> This view is, however, quite mistaken, for two reasons. The first is the simpler of the two to put forth: namely, that the late-medieval demographic crises had, in fact, continued to depress the populations of both England and the Low Countries until well into the first quarter of the sixteenth century. Thus England's population, which may have been as high as 7.5 million in the 1290s, though more likely about 4.5 million, was only 2.25

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<sup>12</sup> The formal expression of this relationship is a variant of the so-called Fisher Identity:  $M \cdot V = P \cdot y$ . In this equation, M stands for the total stock of money in circulation; V, for its income velocity, or the average rate of flow for a unit of that money; P for an index of the price level (e.g. the Consumer Price Index); and y, for the real Net National Income; and  $P \cdot y$  = the NNI in current money. If y expands at the same rate as the combined increase in M and V, there should be no inflation; if y does not expand at the same rate as does M.V, then, inflation will inevitably follow. On this question, see John Munro, 'Mint Outputs, Money, and Prices in Late-Medieval England and the Low Countries,' in Eddy Van Cauwenberghe and Franz Irsigler, eds., *Münzprägung, Geldumlauf und Wechselkurse/ Minting, Monetary Circulation and Exchange Rates*, Trierer Historische Forschungen, 7: *Akten des 8th International Economic History Congress, Section C-7, Budapest 1982* (Trier: University Press, 1984), pp. 31-122; John Munro, 'The Central European Mining Boom, Mint Outputs, and Prices in the Low Countries and England, 1450 - 1550,' in Eddy H.G. Van Cauwenberghe, ed., *Money, Coins, and Commerce: Essays in the Monetary History of Asia and Europe (From Antiquity to Modern Times)*, Studies in Social and Economic History, Vol. 2 (Leuven: Leuven University Press, 1991), pp. 119 - 83; John Munro, 'Patterns of Trade, Money, and Credit,' in James Tracy, Thomas Brady Jr., and Heiko Oberman, eds., *Handbook of European History in the Later Middle Ages, Renaissance and Reformation, 1400 - 1600*, Vol. I: *Structures and Assertions* (Leiden: E.J. Brill, 1994), pp. 147-95; John Munro, 'Precious Metals and the Origins of the Price Revolution Reconsidered: The Conjunction of Monetary and Real Forces in the European Inflation of the Early to Mid-Sixteenth Century,' in Clara Eugenia Núñez, ed., *Monetary History in Global Perspective, 1500 - 1808*, Proceedings of the Twelfth International Economic History Congress at Madrid, August 1998 (Seville, 1998), pp. 35-50; John Munro, 'The Monetary Origins of the 'Price Revolution' Before the Influx of Spanish-American Treasure: The South German Silver-Copper Trades, Merchant-Banking, and Venetian Commerce, 1470-1540', in Dennis Flynn, ed., *Monetary History in Global Perspective, 1500 - 1808*, Variorum Series: *An Expanding World: The European Impact on World History, 1450 - 1800* (London: Ashgate Publishing), forthcoming. For the contrary and erroneous view that population growth was the essential cause of inflation, see n. 15.

<sup>13</sup> For this erroneous review, see David Hackett Fischer, *The Great Wave: Price Revolutions and the Rhythm of History* (Oxford and New York, 1996); my review of this book, for *EH.Net Review* <ehreview@eh.net>, 24 February 1999; and also R.B. Outhwaite, *Inflation in Tudor and Early Stuart England*, 2<sup>nd</sup> edn. (London, 1982), pp. 39-60; Peter Ramsey, ed., *The Price Revolution in Sixteenth-Century England*, Debates in Economic History series (London, 1971).

million in the early 1520s, according to the Tudor Muster Rolls and Lay Subsidies.<sup>14</sup> Similarly, in the Low Countries, most economic historians now agree that, after the economic depredations that this region suffered during the revolts against Archduke Maximilian (1487-96), demographic recovery did not begin until c. 1510-1520. Statistical evidence for the continued slump can be found in the number of census hearths (family homes) conducted in Brabant: a number that fell from 92,738 hearths in 1437 to 75,343 hearths in 1496.<sup>15</sup> If population was indeed growing in both England and the Low Countries during the second quarter of the sixteenth century, and during the last decades of Erasmus's career, that demographic growth, from such a very low level earlier in the century, could hardly have exerted enough pressure, by itself, to produce or induce any rise in prices.

Nevertheless, the economics of the subsequent demographic expansion must be more fully considered, since it embraced the better part of the Price Revolution era. Stated simply, a steady, prolonged rise in population that was not accompanied by a proportional expansion in the amount (and quality) of land and capital employed productively, by significant technological changes, or by other forces that induced economic growth, would almost inevitably have resulted in 'diminishing returns', particularly in agriculture or other land/resource-based occupations, and thus in rising marginal costs and prices. That would also explain the perceived fall in real wages, because such wages were, supposedly, determined by the marginal

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<sup>14</sup> See John Hatcher, *Plague, Population, and the English Economy, 1348-1530* (London, 1977), pp. 11-73; John Hatcher, 'Mortality in the Fifteenth Century: Some New Evidence,' *Economic History Review*, 2nd ser. 39 (Feb. 1986), 19-38; Ian Blanchard, 'Population Change, Enclosure, and the Early Tudor Economy,' *Economic History Review*, 2nd ser. 23 (1970), 427-45; Bruce Campbell, 'The Population of Early Tudor England: A Re-evaluation of the 1522 Muster Returns and the 1524 and 1525 Lay Subsidies,' *Journal of Historical Geography*, 7 (1981), 145-54; Pamela Nightingale, 'The Growth of London in the Medieval English Economy,' in Richard Britnell and John Hatcher, eds., *Progress and Problems in Medieval England* (Cambridge and New York, 1996), 89-106.

<sup>15</sup> Joseph Cuvelier, *Les dénombrements de foyers en Brabant, XIVe - XVIe siècle*, 2 vols. (Brussels, 1912-13), 1: cxxxv, clxxviii, ccxxiii, ccxxvii, 432-33, 446-47, 462-77, 484-87; Van der Wee, *Growth of the Antwerp Market* (n. 1), vol. I, Appendix 49:1-3, pp. 546-48; John Munro, 'Economic Depression and the Arts in the Fifteenth-Century Low Countries,' *Renaissance and Reformation*, 19 (1983), 235-50; reprinted in John Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (Aldershot, 1994).

productivity of labour, which presumably fell sharply during the sixteenth and early seventeenth centuries.<sup>16</sup> But, even though such a demographic model can explain the rise in particular, individual relative prices and wages – why wheat prices rose more than, say, linen prices – such a model cannot be used, not in this simplistic fashion, to explain a general rise in prices, a rise in the *average price level*, as measured by some form of a Consumer Price Index. The best known, and one employed in this study, is the Phelps Brown and Hopkins ‘Basket of Consumables’ Index; and the other used in this study is one that Herman Van der Wee constructed for Brabant, modelled precisely on the Phelps Brown and Hopkins Index.<sup>17</sup>

Such a rise in general prices would occur in this situation only if population growth had stimulated or was accompanied by monetary changes that led to an increase in the stock and/or flow of circulating money, thus again justifying the argument that inflation was and is essentially a monetary phenomenon. Three leading economic historians have in fact contended that population growth in western Europe during the Price Revolution era did result in or contributed to macro-economic changes that in turn led to a disproportionate increase in the income velocity of money, for various reasons: (1) disproportionate changes in urbanization, with a greater commercialization of the rural sector and far more complex commercial and financial networks; and (2) changes in the demographic age structures and thus in dependency ratios, forcing

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<sup>16</sup> The classic statement that the real wage = MP of labour is a gross oversimplification. The true equation is  $W_L = MRP_L$  – the *marginal revenue product* of labour. If those forces that supposedly depressed wages also increased the relative prices for agricultural products, and the profits from commercial farming, they would therefore have provided a counterbalancing force to increase the MRP of labour.

<sup>17</sup> E.H. Phelps Brown and S.V. Hopkins, ‘Seven Centuries of the Prices of Consumables Compared with Builders’ Wage-Rates,’ *Economica*, 23 (Nov. 1956), reprinted E. M. Carus-Wilson, ed., *Essays in Economic History*, vol. II (London, 1962), pp. 179-96 and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 13-59, containing additional statistical appendices not provided in the original publication, or in earlier reprints. Herman Van der Wee, ‘Prijzen en lonen als ontwikkelingsvariabelen: Een vergelijkend onderzoek tussen Engeland en de Zuidelijke Nederlanden, 1400-1700,’ in *Album offert à Charles Verlinden à l’occasion de ses trente ans de professoriat* (Ghent, 1975), pp. 413-35; republished in English translation as: ‘Prices and Wages as Development Variables: A Comparison between England and the Southern Netherlands, 1400-1700,’ *Acta Historiae Neerlandicae*, 10 (1978), 58-78. Only the Dutch version, however, contains the specific annual data in tabular form.

many more families to disboard or to draw on accumulated assets to meet increased financial expenditures.<sup>18</sup> Apart from changing demographic structures, the other economic circumstances portrayed in these model pertain largely to just sixteenth-century England. Thus they fail explain the very similar inflationary patterns of prices in the Low Countries, which had undergone most of these structural economic changes far earlier. Nevertheless, even if the famous John Maynard Keynes and other economists contend that increases in the stock of money – such as clearly occurred in western Europe – usually led or would lead to some decline in the income velocity of money, with a reduced need to economize on its use, most economic historians do agree that the Price Revolution era did experience a rise in such velocity.<sup>19</sup>

The traditional monetary explanations for the European Price Revolution, theories first enunciated by the French philosopher Jean Bodin in this very era (in publications from 1566 to 1578), focussed on increases in the stock of money, and above all on the influx of Spanish American treasure.<sup>20</sup> As opponents of the monetary explanation have more recently noted, however, the inflation that marked the onset of the

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<sup>18</sup> See Harry Miskimin, 'Population Growth and the Price Revolution in England,' *Journal of European Economic History*, 4 (1975), 179-85; reprinted in his *Cash, Credit and Crisis in Europe, 1300 - 1600* (London: Variorum Reprints, 1989), no. xiv; Jack Goldstone, 'Urbanization and Inflation: Lessons from the English Price Revolution of the Sixteenth and Seventeenth Centuries,' *American Journal of Sociology*, 89 (1984), 1122 - 60; Peter Lindert, 'English Population, Wages, and Prices: 1541 - 1913,' *The Journal of Interdisciplinary History*, 15 (Spring 1985), 609 - 34; and n. 15 above.

<sup>19</sup> See John Maynard Keynes, *The General Theory of Employment, Interest and Money* (London, 1936), pp. 165-85. An increase in the income-velocity of money is the same as a reduction in the quantity of hoarded money or of idle cash balances. In the less well known Cambridge Cash Balances equation --  $M = k.P.y$  – the symbol  $k$  stands for the proportion of real Net National Income ( $P.y$ ) that the public chooses to hold in real cash balances, i.e. in  $M$ , reflecting the constituent elements of Keynesian liquidity preference: to hold cash for precautionary motives, for speculative motives, and more generally for current transactions needs. In this equation  $k$  is simply the reciprocal of  $V$ ; i.e.  $k = 1/V$ . Keynesian economists would argue that an increased stock of money would lead to a rise in  $k$ , i.e. to a fall in  $V$ , because there was less need to economize on the use of a more abundant stock of money, and more particularly, because that increased stock of money should lead to a fall in interest rates, thus reducing the opportunity cost of holding idle, non-invested cash balances. But for compelling evidence on the sharp rise in monetary velocity in the 16<sup>th</sup> and early 17<sup>th</sup> centuries, see not only the articles cited in the previous note, but also Nicholas Mayhew, 'Population, Money Supply, and the Velocity of Circulation in England, 1300 - 1700,' *Economic History Review*, 2nd ser., 48:2 (May 1995), 238-57.

<sup>20</sup> See n. 48 below, for the debate between Bodin and Malestroit on the cause of inflation.

Price Revolution had begun just before 1520, and thus long before any significant quantities of Spanish American silver reached Europe, beginning only in the 1530s (with a mean annual import of 12,148 kg in 1536-40). No truly large imports of silver are recorded before the early 1560s (with a mean of 83,374 kg in 1561-65), just after the mercury amalgamation process had begun to effect a technological revolution in Spanish-American mining.<sup>21</sup> Even if such influxes of Spanish-American silver clearly served to augment and aggravate the monetary expansion that fuelled the inflation of the Price Revolution era from the 1560s, they did not instigate this phenomenon, so that we must seek elsewhere for the fundamental monetary causes that sparked the onset of this inflation, one that lasted over 130 years.

The initial and least important monetary factor was the Portuguese export of gold from West Africa (São Jorge): beginning as a trickle in the 1460s, it rose to 170 kg a year by the early 1480s, to peak at about 680 kg per year in the late 1490s.<sup>22</sup> Far more important, since almost all European money-of-account or pricing systems were based on silver coinages, was the Central European silver-copper mining boom, which had begun in the 1460s, an era of severe coin scarcity and of even more severe deflation throughout western Europe. The effect of generally low silver-based prices was, therefore, to increase the purchasing power of silver, ounce for ounce, and thus to provide a greater profit-incentive for developing new methods of producing silver. Thus ensued a most remarkable combined technological revolution in mining and metallurgy. The first revolution was in mechanical engineering: the invention of mechanical, water-powered pumps to remove excess water, via specially drilled adits, from much deeper mine shafts in the mountainous regions of Saxony, the Tyrol, and Bohemia. The second was the *Seigerhütten* process in chemical engineering: a new method of smelting with lead to separate silver from argentiferous-cupric ores, by far

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<sup>21</sup> See John TePaske, 'New World Silver, Castile, and the Philippines, 1590-1800 A.D.,' in John F. Richards, ed., *Precious Metals in the Medieval and Early Modern Worlds* (Durham, N.C., 1983), pp. 424-446; Earl Hamilton, *American Treasure and the Price Revolution in Spain, 1501-1650* (Cambridge, Mass., 1934; reissued 1965).

<sup>22</sup> Ivor Wilks, 'Wangara, Akan, and the Portuguese in the Fifteenth and Sixteenth Centuries,' in Ivor Wilks, ed., *Forests of Gold: Essays on the Akan and the Kingdom of Asante* (Athens, Ohio, 1993), pp. 1-39.

the most plentiful source of silver in western Europe. According to John Nef, Europe's output of mined silver had risen more than five-fold when this German-based mining boom reached its peak in the mid 1530s: with an annual production that ranged from a minimum of 84,200 kg fine silver to a maximum of 91,200 kg -- and thus well in excess of any amounts pouring into Seville before the mid-1560s. My own statistical compilations, limited to just the major German and Hungarian-Bohemian mines, and thus only very partial estimates of total outputs, indicate that the Central European production of mined silver rose from a quinquennial mean of 12,973 kg in 1471-75 to one of 55,704 kg in 1536-40. The increased output of copper from the mining boom was also economically very important, for two reasons: copper was an essential ingredient as the alloy in all silver and gold coinages; and it was also a major military metal, for the production of bronze artillery (safer and more effective than iron cannons).<sup>23</sup>

### **Comparative coinage statistics for the Burgundian-Habsburg Netherlands and England**

From the 1460s, as several recent publications have sought to demonstrate, the competitive monetary and commercial policies of England and the Burgundian-Habsburg Netherlands, along with other factors that propelled the rapid expansion of the Brabant Fairs, succeeded in attracting more and more of those South

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<sup>23</sup> See John Nef, 'Silver Production in Central Europe, 1450-1618', *Journal of Political Economy*, 49 (1941), 575-91; John Nef, 'Mining and Metallurgy in Medieval Civilisation,' in *The Cambridge Economic History of Europe*, vol. II: *Trade and Industry in the Middle Ages*, 2nd rev. edn., ed. M. M. Postan and E. E. Rich (Cambridge, 1987), pp. 691-761 (1st edn. published in 1952); Philippe Braunstein, 'Innovations in Mining and Metal Production in Europe in the Late Middle Ages,' *The Journal of European Economic History*, 12 (1983), 573-91; Michael North, *Geldumlauf und Wirtschaftskonjunktur im südlichen Ostseeraum an der Wende zur Neuzeit (1440-1570)*, Kieler Historische Studien vol. 35 (Sigmaringen, 1990); Ekkehard Westermann, *Das Eislebener Garkupfer und seine Bedeutung für den europäischen Kupfermarkt, 1460-1560* (Vienna, 1971); Ekkehard Westermann, 'Die Bedeutung des Thüringer Saigerhandels für den mitteleuropäischen Handel an der Wende vom 15. zum 16. Jahrhundert,' *Jahrbuch für die Geschichte Mittel- und Ostdeutschlands*, 21 (1972): 68-92. [Ed. by Wilhelm Berges, Hans Herzfeld, and Henryk Skrzypczak]; Ekkehard Westermann, 'Tendencies in the European Copper Market in the 15th and 16th Centuries,' in *Precious Metals in the Age of Expansion*, ed. Hermann Kellenbenz (Stuttgart, 1981), 79-86; John Hatcher, 'The Great Slump of the Mid-Fifteenth Century,' in Richard Britnell and John Hatcher, eds., *Progress and Problems in Medieval England: Essays in Honour of Edward Miller* (Cambridge and New York, 1996), pp. 237-72; Pamela Nightingale, 'England and the European Depression of the Mid-Fifteenth Century,' *The Journal of European Economic History*, 26:3 (Winter 1997), 631-56; Munro, 'Central European Mining Boom (n. 12)', pp. 119-83, and others sources cited above in n. 12.

German silver-copper flows to these Fairs, and thus away from Venice, the historically more natural outlet for those metals. At the Brabant Fairs, these metals and other German commodities were, in effect, used to purchase principally English and Netherlander textiles for re-export to Germany, Central Europe, and Italy<sup>24</sup>. Those metal flows and burgeoning commerce are reflected in the mint accounts for the Burgundian Low Countries, and to a lesser extent in the English mint accounts. Thus, in the Antwerp and Bruges mints, the quinquennial mean production of coined silver rose from just 101.8 kg in 1451-55 to 7,314.0 kg in 1471-75, with an overall quarter-century mean of 2,386.0 kg in 1451-75; in the next quarter century, 1476-1500, that mean had more than doubled to 5,374.0 kg, and, though declining in 1501-25, rose again to peak at 11,403.9 kg of fine silver in 1551-75. In the London Tower Mint, the quarter-century mean of minted silver coinage rose from 1,303.7 kg. in 1476-1500 to 2,452.6 kg in 1501-25, then to 9,456.5 kg. in 1526-50, and peaked at 11,549.7 kg. in 1551-75 (but a virtually identical mean of 11,329.7 kg. in 1576-00).

Equally significant are the changes in the overall composition of the coined money supply. In England, silver had accounted for only 22.5 percent of the total value of the coinage in 1501-26 but 84.2 percent in 1576-1600. In the southern Low Countries, the proportion in silver coinage had risen from 27.6 percent in 1451-75 to 74.9 percent during the German silver mining boom, falling to 28.4 percent in 1501-25, but rising again to 48.3 percent in 1526-50, and then soaring to 72.3 percent in 1576-1600. Since merchants and consumers made their expenditures in current coin, and not in bullion, the more appropriate statistics to cite are the aggregate value of the combined gold and silver mint outputs, in current money-of-account, for both countries. In England, the quarter-century mean of those aggregate coinage values rose from £24,378.6

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<sup>24</sup> Van der Wee, *Growth of the Antwerp Market* (n. 1), vol. I, Appendix 44:1, p. 523 (Hungarian copper trade); John Munro, *Wool, Cloth, and Gold: The Struggle for Bullion in Anglo-Burgundian Trade, ca. 1340-1478* (Brussels and Toronto, 1973), pp. 127-54; John Munro, 'Anglo-Flemish Competition in the International Cloth Trade, 1340 - 1520,' *Publication du centre européen d'études bourguignonnes*, 35 (1995), 37-60 [*Rencontres d'Oxford (septembre 1994): L'Angleterre et les pays bas bourguignons: relations et comparaisons, XVe - XVIe siècle*, ed. Jean- Marie Cauchies]; John Munro, 'The Low Countries' Export Trade in Textiles with the Mediterranean Basin, 1200-1600: A Cost-Benefit Analysis of Comparative Advantages in Overland and Maritime Trade Routes', *International Journal of Maritime History*, 11:2 (Dec. 1999), 1 - 30; Munro, 'The Central European Mining Boom, Mint Outputs, and Prices (n. 12) ', pp. 119 - 83.

sterling (per annum) in 1476-1500, to £64,885.5 in 1501-25 – well more than double – to £199,540.6 in 1526-50, an era that includes, of course, the ill-famed ‘Great Debasement’ of Henry VIII and his successors (1542-1552). Yet even the ensuing era of restored and stable coinages produced a very large and respectable mint output with a mean annual value of £127,821.8 sterling in 1551-75. In the Burgundian-Habsburg Netherlands (Flanders and Brabant), the comparable quarter-century means value of the combined gold and silver coinages were: £31,499.4 *groot* Flemish in 1451-75; £65,650.9 in 1476-1500; £64,460.0 in 1501-25; £58,750.7 in 1526-50; and £162,859.7 in 1551-75.<sup>25</sup>

### **The financial revolution in the Netherlands during the early Price Revolution era**

An equally important factor that contributed to the increasing rate of western European monetary expansion, during and from the second quarter of the sixteenth century, was a veritable financial revolution whose origins lay partly in late-medieval England, but chiefly in the early sixteenth-century Low Countries. In 1507, Antwerp’s civic law merchant court, evidently relying on a 1436 precedent from London’s law merchant court, issued a formal legal *turba*, which, when copied by other civic courts (Bruges 1529), and then enshrined in parliamentary legislation, by the Habsburg Estates General in 1537 and 1541, established the virtually complete legal and judicial foundations for negotiability in early-modern Europe. In essence, these legal measures provided full protection for third-party creditors, including ‘bearers’, in all commercial bills (bills of exchange and bills obligatory). Those holding such bills at maturity, after they had circulated from hand to hand over several transactions, were thus permitted to sue and claim full damages from

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<sup>25</sup> Data computed from the archival mint accounts for Bruges, Ghent, Mechelen, and Antwerp in the Algemeen Rijksarchief, Rekenkamer (my research for the 15<sup>th</sup> century; partially published in Eddy H. G. Van Cauwenberghe, Rainer Metz, Franz Irisgler, and John Munro, *Coinage in the Low Countries (14<sup>th</sup> - 18<sup>th</sup> Centuries)*, Vol. I: *Antwerp - Bruges - Brussels - Ghent* (Leuven: Leuven University Press, 1988), pp. 1-292. For England, calculated from tables and other data in Christopher E. Challis, ‘Lord Hastings to the Great Silver Recoinage, 1464 - 1699,’ and C.E. Challis, ‘Appendix 1. Mint Output, 1220-1985,’ both in C. E. Challis, ed., *A New History of the Royal Mint* (Cambridge: Cambridge University Press, 1992), pp. 179-397, pp. 673-698. The English mint output data for 1526-50 do include, of course, the recycled silver coinages in ‘Great Debasement’ (1542-1552); and those for 1551-75 include the Elizabethan Recoinage of 1560-61. Thereafter there were no further monetary changes to explain the very high rates of coinage outputs, especially of silver.



defaulting debtors (and others who had signed or endorsed their names in transferring such bills in payment).

Furthermore, the Estates General of 1541 – evidently also for the first time in European legal and financial history, broke with the long medieval tradition of usury laws to permit interest payments up to 12 percent (so that now any rate above that became *usury*); and that provision thus at least implicitly permitted commercial discounting (i.e. selling a bill before maturity for some value less than, ‘discounted from’, the stipulated face value, at redemption). Along with the establishment of the Antwerp *Bourse* in 1531, as a secondary market for commercial bills and bonds, these changes permitted and then promoted a very rapid expansion in the use of credit, both private and public. As one well documented example: the annual volume of Spanish government annuities (*rentes* or *juros*), much of it marketed on the Antwerp *Bourse*, rose from 5 million ducats (of 375 maravedis) in 1515 to 83 million ducats in the 1590s.<sup>26</sup>

Clearly, therefore, the common and once persuasive argument that there had been no significant monetary expansion in Europe, before those vast influxes of Spanish-American silver (from the 1560s), can no longer stand scrutiny. The more interesting question then becomes: why did the Price Revolution begin so late, with the onset of sustained inflation in the 1520s, rather than so early? That is much too complex

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<sup>26</sup> See Herman Van der Wee, ‘Monetary, Credit, and Banking Systems,’ in E.E. Rich and Charles Wilson, eds., *The Cambridge Economic History of Europe*, Vol. V: *The Economic Organization of Early Modern Europe* (Cambridge, 1977), pp. 290-393; Herman Van der Wee, ‘Anvers et les innovations de la technique financière aux XVIIe et XVIIIe siècles’, *Annales: E.S.C.*, 22 (1967), 1067-89; republished as ‘Antwerp and the New Financial Methods of the 16th and 17th Centuries’, in Herman Van der Wee, *The Low Countries in the Early Modern World*, Variorum Collected Studies (Aldershot, 1993), pp. 145-66; John Munro, ‘The International Law Merchant and the Evolution of Negotiable Credit in Late-Medieval England and the Low Countries,’ in Dino Puncuh, ed., *Banchi pubblici, banchi privati e monti di pietà nell'Europa preindustriale: amministrazione, tecniche operative e ruoli economici, Atti della Società Ligure di Storia Patria*, Nuova Serie, Vol. XXXI (Genoa, 1991), pp. 49 - 80; reprinted in John Munro, *Textiles, Towns, and Trade: Essays in the Economic History of Late-Medieval England and the Low Countries*, Variorum Collected Studies series CS 442 (Aldershot, 1994); John Munro, ‘English “Backwardness” and Financial Innovations in Commerce with the Low Countries, 14th to 16th centuries,’ in Peter Stabel, Bruno Blondé, and Anke Greve, eds., *International Trade in the Low Countries (14<sup>th</sup> - 16<sup>th</sup> Centuries): Merchants, Organisation, Infrastructure*, Studies in Urban, Social, Economic, and Political History of the Medieval and Early Modern Low Countries no. 10 (Leuven-Apeldoorn, 2000), pp. 105-67. Note that *usury* originally meant any amount of interest (payment beyond the stipulated principal) on any loan (*mutuum*); and that the amount of discount on a bill cashed before maturity represents foregone interest.

a question to examine in this study, though I have provided some hypotheses in other publications. In brief, the answer may be two-fold: (1) that, as a consequence of the late-medieval ‘Great Depression’, certainly a pronounced depression in the mid-fifteenth century, the European economy enjoyed so much ‘slack’ in under-utilised resources that it could readily respond to a large expansion in newly monetized demand by increasing outputs without incurring rising costs; and (2) that Venice had succeeded in retaining a still important share of the South-German silver-copper flows, until c.1515-20, when its commerce suffered a series of ruinous disasters at the hands of the expanding Ottoman Turks, so that even more of these metals, and the international trade based upon them, were diverted to the Antwerp market.<sup>27</sup>

#### THE COINAGES OF RENAISSANCE ENGLAND AND THE HABSBURG LOW COUNTRIES

##### **The mechanics of minting and the economics of debasement**

Any study of money and prices – and of changes in relative prices (the relationship of changing individual prices) and of the price level, i.e. of the Consumer Price Index, requires a detailed knowledge of the coinage systems, of the periodic changes in gold and silver coinages, and of their relationships to the money-of-account, or the accounting systems used to reckon prices (including money wages, rents, etc.). As demonstrated in greater detail in the appendices for *CWE* 1 and 2, most of western Europe, in the full millennium from Charlemagne to the French Revolution, used a silver-based money-of-account consisting of pounds, shillings, and pence. Charlemagne’s original ‘pound’ (*libra*, and thus *livre*) was intended to be worth the Roman pound weight of pure silver, a weight that did become the French *livre* of 489.506 grams (subdivided into two *marcs*, each weighing 244.753 g).

Obviously no silver coins of that pound weight were ever struck, but only pennies or deniers (based on the Roman silver *denarius*): 240d to the pound. To simplify the accounting procedures, the ‘pound’ value was divided into 20 shillings or *solidi* (from the Roman gold *solidus*) or *sous* – *Schelling* in German. Thus

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<sup>27</sup> See Munro, ‘Monetary Origins of the Price Revolution (n. 12)’; also available as a Working Paper at: <http://www.economics.utoronto.ca/ecipa/archive/UT-ECIPA-MUNRO-99-02.html>; and sources cited in n. 12 and 23-24, 26.

each shilling contained 12d, to produce an accounting system that combined the Celtic manner of counting in twenties (*quatre-vingt* = 80) and the Graeco-Roman heritage of counting in twelves. The relationship between the actual coin and this almost universal money-of-account system was simply that the silver penny always represented and was worth 1d; and thus 12 such pence were thus always worth 12d or one shilling.<sup>28</sup>

Subsequently, over the ensuing centuries, the monetary pound deviated more and more from the original pound weight because of the virtually universal fiscal policy known as ‘debasement’, more accurately represented by the French term *affaiblissement* and the Italian *indebolimento*. ‘Debasement’ was, quite simply, the reduction of the amount of a coin’s fine precious metal, silver or gold, represented in the unit of the money account (i.e. in 1d, in 1s and thus in £1); and consequently the ‘pound’ in the money-of-account came to contain far less silver than the original pound weight of silver. For example, in England, the pound sterling, originally equal to the full Tower Pound weight of sterling silver (12 ounces) after the Norman Conquest, contained only 6.4 oz or 186.72 grams of sterling silver in Erasmus’s youth (in fact, from 1464 to 1526). That meant that, from a Tower Pound of sterling silver, 450 pence were now struck, rather than the original 240 pence (i.e. 37s 6d, instead of 20s 0d).

For silver coins, there were two, and for gold coins, three methods of effecting that reduction in precious metal contents: (1) by reducing the actual weight of the coin; and/or (2) by reducing the fineness of the coin, i.e. by increasing the relative proportion of the base metal alloy (copper) in the coin; and (3) almost uniquely for gold coins, by increasing the ‘money of account’ or stipulated face value of the coin.

The fineness of gold, in both England and the Low Countries, and indeed almost universally, was expressed in terms of a maximum of 24 carats (with 4 grains to a carat in England and 12 grains in the Low Countries). The traditional fineness of the English gold coinage, as well as that of Italian florins and ducats,

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<sup>28</sup> See John Munro, ‘Money and Coinage in the Age of Erasmus (n. 3)’, pp. 312-34, pp. especially 328; and Appendix E, 347. With some few, rare exceptions, in later medieval debasements, as discussed below, the subdivisions of the penny were more drastically reduced in their silver contents, which had the effect of raising the money-of-account value of the penny, no longer deemed to be a penny; and these subdivisions became the ‘link money’ with the money-of-account.

was the effective maximum of 23.875 carats, because at least 1/8th carat of copper was always required to provide the necessary hardness and durability to permit the coin's effective circulation.

For silver, the effective maximum fineness in France and the Low Countries (until 1520) was known as *argent-le-roi* (AR), with a maximum of 12 *deniers argent-le-roi* – with 24 grains per *denier*; and that meant 23/24 or 95.833 percent pure silver, with the remainder necessarily in copper alloy, again for hardness and durability in coinage circulation. In England, the traditional and rarely untouched 'sterling silver' consisted of 11 ounces and 2 pennyweight (dwt) silver, and the necessary 18 dwt copper, for hardness: thus it was only 92.50 percent pure silver (i.e. of the maximum 12 oz).

The weight of the coin was always specified only by the so-called *taille*, or the number cut from the fixed mint-weight unit: in France and the Low Countries, the *marc de Troyes*, with 8 *onces de Paris* (i.e. one-half *livre* of 16 *onces*), with a metric weight of 244.753 g; in England, the Tower Pound (to 1526), with 12 ounces = 11.250 Troy ounces = 349.914 g.

The consequence of using any combination of these methods to reduce the precious metal contents of the coins was to increase the money-of-account value and thus, or almost always, the number of coins that could be struck or minted from the pound weight or *marc* weight of fine metal, as just demonstrated with the English sterling coinage. In so augmenting the coined money supply, coinage debasements were almost always inflationary – at least, in the absence of countervailing deflationary forces.<sup>29</sup> For reasons enunciated earlier, especially with unpredictable changes in coinage velocity and in the economy's real output, such increases in the money supply virtually never produced a proportional degree of inflation. In any event, the law of reciprocals must again be cited, for the theoretical relationship between a coinage debasement and the increase in prices, or rather the increase in the price or value of a pound/*marc* of silver, is expressed by

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<sup>29</sup> Because of the strong deflationary forces at work in the West European economy in the mid-15th century, as noted above in n. , Edward IV's dramatic 20 percent coinage debasement (reduction in silver contents), in 1464-64, thus increasing the value of silver by 25 percent (as explained by the equation above) had only a momentary effect on prices, which, shortly after, continued their general decline.

the following equation:

$$\Delta T = [1/(1-x)] - 1$$

In this equation, the letter  $x$  represents the *percentage* reduction in the silver content of the penny, or other ‘link money’; and  $\Delta T$  stands for the *percentage change* in the *traite*, the medieval mint term for the full money-of-account value of the coinage that could be struck from that mint-weight of fine metal, i.e. the *taille* or number of coins struck from the pound/*marc*, multiplied by the coin’s face value, and then divided by the percentage fineness of the metal:

$$T = \frac{\textit{taille} \times \textit{face value}}{\textit{fineness (alloy)}}; \text{ or more simply: } T = (t.v)/f$$

For example, in 1464-65, Edward IV reduced the weight of the sterling silver penny from 0.972 g to 0.778g – without altering its sterling fineness (92.5 percent fine), producing a new English coinage that would remain unaltered for over 60 years, until 1526. In so doing, he increased the number of pence struck per Tower Pound from 300 to 360, thus increasing its *traite* value from 30s 0d to 37s 6d sterling. While the weight reduction in the silver coinage was exactly 20.0 percent, the increase in the value of silver was – exactly as predicted by this formula – 25.0 percent.<sup>30</sup> The failure to observe this reciprocal relationship between coinage debasement and ensuing changes in prices is an all too common era in so many publications in economic history.

In the medieval and early Renaissance eras, England was virtually unique in effecting its ‘debasements’ by weight reductions alone – at least until the horrendous ‘Great Debasements’ of Henry VIII and his successors (which finally reduced the fineness to just 25 percent silver). Hence the inadequacy of the English monetary term. Most other west European princes or states used instead a combination of weight- and fineness-reductions, the better to disguise these nefarious changes, which represented an ‘inflation tax’ on the public at large. The objective of a well-designed debasement was to attract more silver

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<sup>30</sup> Thus:  $[1 / (1 - 0.20)] - 1 = 0.25$  or 25.0 percent

or gold bullion to the mints by offering merchants and bankers more *debased* coins and thus a greater money-of-account value for their bullion than before – and greater than that offered by competing mints. Those merchants or bankers supplying the bullion would profit, but only if they spent the increased number of coins before the ensuing increase in the money supply produced some inflation, and also before the public became aware of these changes and responded by raising prices. The mint and the prince profited from the increased volume of minting, and often also from an increase in the mint fees of *brassage* (for the mint) and *seigniorage* (for the prince), fees expressed as a percentage of the bullion coined.

So long as the changes in both weight and fineness were relatively small, those changes were exceptionally difficult to detect, essentially because of the then crudity of medieval and early modern minting techniques, with ‘hammered coinages’. From fine, thin sheets of alloyed metal, the mint-master cut small round circular ‘blanks’, which were then placed between coin dies: the lower one acted as the anvil and the upper as the hammer. The resulting coins, even when carefully trimmed, were rarely identical to each other in weight, so that such a ‘debasement’ could be detected only weighing a large number of such coins with finely tuned scales, generally unavailable to the public and most merchants. Even more difficult to detect were changes in the alloy or fineness, since the so-called ‘touchstone’, on which the merchant marked or scratched the coin, was rarely accurate within five percent, even for those highly skilled in detecting the differences in the colours of the coin residue left on the touchstone. Not until the nineteenth century, with steam-powered milling machines and improved chemical techniques of deduction would this universal menace of public debasement and private counterfeiting – much the same thing for the victimized public – be finally discouraged.<sup>31</sup>

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<sup>31</sup> See: Philip Grierson, *Numismatics* (London, 1975), pp. 146-52, stating (p. 151) that ‘when carried out by an expert, this “touching” is said to give results accurate to half a carat; but much practice is required to ensure that the strike of the needle and that of the object being tested are equally firmly made’. See also: Philip Grierson, ‘Medieval Numismatics’, in James M. Powell, ed., *Medieval Studies: An Introduction* (Syracuse, N.Y., 1976), pp. 124-27, reprinted in Philip Grierson, *Later-Medieval Numismatics (11<sup>th</sup> - 16<sup>th</sup> Centuries): Selected Studies*, Variorum Reprints CS98 (London, 1979), no. I; Philip Grierson, ‘Coin Wear and the Frequency Table’, *Numismatic Chronicle*, 7<sup>th</sup> series, 3 (1963), pp. i-xiv, reprinted in *Later-Medieval*

Gold coinages were less frequently subjected to these modes of debasements, though certainly they did occur, especially in the medieval Low Countries and France. But since gold coins were so much more highly valued, and because they were largely reserved for banking, finance, and international trade, the merchants who used them were much more likely to have the incentives, knowledge, and facilities to test gold coins for proper weight and fineness. Since it was obviously important to harmonize the relative values of gold and silver coins at the mint with their market values – the bimetallic ratios – most princes who debased their silver coinages (thus largely reserved for domestic circulation) would more or less proportionally ‘debase’ the gold coinages, by some reductions in weight/or fineness and/or by an increase in their face values. Indeed, the values of any gold coin were most commonly expressed in terms of the silver-based money of account.

#### **Coinage and monetary changes in late-medieval, early modern England (1344 - 1526)**

Thus, in August 1344, Edward III had effectively inaugurated England’s era of bimetallism in issuing the famed gold noble, containing 7.776 grams of virtually pure metal, with a value of one-third of a pound: i.e. 6s 8d or 80d; and for over two centuries, this noble coin served as an international medium of exchange. Almost seventy years later, Henry IV, in undertaking a purely defensive debasement, reduced its weight to 6.998 g, which was retained, unchanged in fineness as well, until Edward IV’s debasement of 1464-65. For gold, Edward IV’s mint alterations involved two new coins: (1) a reissue of Edward III’s noble, known as the *Ryal* (Royal) or *rose-noble*, but now valued at 10s 0d; and (2) the *angle-noble*, reduced in weight to 5.184 grams, while retaining the noble’s historic value of 6s 8d sterling. Perhaps an even more significant result of the combined changes in the gold coinage (‘debased’ by 25.92 percent) and the silver coinage (debased, as noted above, by 20.00 percent) was an increase in the bimetallic mint-ratio from 10.332:1 to 11.158:1. That meant that Edward IV had relatively ‘overvalued’ gold and ‘undervalued’ silver, in relation to the

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*Numismatics*, no. XIX; Philip Grierson, ‘Weight and Coinage’, *Numismatic Chronicle*, 7<sup>th</sup> series, 4 (1964), pp. iii. xvii, reprinted in *Later-Medieval Numismatics*, no. XX; Angela Redish, *Bimetallism : An Economic and Historical Analysis* (Cambridge, 2000).

current mint-ratios in the Burgundian-Habsburg Netherlands, which (at least from the 1490s) had a lower bimetallic ratio of 10.537:1, reduced again to 10.176:1 in 1500. Such a difference in the bimetallic-ratios helps to explain why the Netherlands's mints proved generally more successful in attracting silver than did the English in this era.

Apart from Henry VII's issue of the gold *sovereign* in 1489, worth a full pound sterling, and then, in 1504, the *testoon*, as a sterling silver shilling coin (proportional in weight and value to the penny), these gold and silver coinages again remained perfectly stable for more than 60 years, until November 1526.<sup>32</sup>

After such a long period in which the bulk of the coinage had undoubtedly suffered considerable precious-metal contents from 'wear and tear', and fraudulent 'clipping, Henry VIII evidently felt compelled to effect a relatively minor 'defensive debasement' of 11.18 percent (for silver, a weight reduction, from 0.778 g to 0.691g), so that the newly issued coins would match or be equivalent to the currently circulating standard.<sup>33</sup> Both coinages were altered proportionately, to leave the bimetallic ratio virtually unchanged at 11.157:1. The value of the *angel-noble*, whose weight and fineness were unaltered, was now raised by 12.5 percent, from 6s 8d (80d) to 7s 6d (90d) sterling, while two new gold coins were introduced: (1) the *St. George noble* (4.608 grams of traditional fineness of 23 carats 3.5 grains), to be worth the traditional 6s 8d, and (2) the far more popular and better known gold *rose crown* (3.456 grams), with the lesser fineness of 22 carats, and a value of 5s 0d (60d, i.e. one quarter of the pound sterling). Half crowns of 2s 6d were also issued; and coins of that name and value continued to circulate (but as silver coins) until England's adoption of metric coinage in 1972.<sup>34</sup> The equally significant change was the substitution of the heavier 12 ounce

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<sup>32</sup> Christopher Challis, *The Tudor Coinage* (Manchester and New York, 1978), pp. 44-67.

<sup>33</sup> For an explanation of the mechanics and economics of this monetary situation, see Sir Albert Feavearyear, *The Pound Sterling: A History of English Money*, 2<sup>nd</sup> revised edn. by E. Victor Morgan (Oxford 1963), pp. 231-45; Munro, *Wool, Cloth, and Gold* (n. 24), pp. 25-35.

<sup>34</sup> The first attempt at issuing the crown took place in August 1526, with a value of 4s 6d sterling. Complete text in Paul L. Hughes and James F. Larkin, eds., *Tudor Royal Proclamations*, 3 vols. (New Haven and London, 1964-69, vol. I: *The Early Tudors (1485-1553)* (London, 1964), no. 112 (5 November 1526),



Troy pound (373.242g) to replace the long traditional Tower Pound (349.914g). These coinages remained unaltered until the inception of the infamous Great Debasement, in 1542, which thus commenced after the time-limit set for this current study (see Tables 1.A, 1.B, and 2).<sup>35</sup>

### Monetary and coinage changes in early-modern France

Across the Channel (La Manche), in France, the coinage changes, though they appear from the tables to have been more complex, were in fact also as relatively minor as were the English alterations, and were also instituted only many years after the previous set of changes, in the later fifteenth century. The primary French silver coin, the *blanc couronne* or *douzain* – worth 12d *tournois*, and about 2d *groot* Flemish, when first issued in April 1488 – remained unchanged with a fineness of 4 *deniers* 12 *grains* AR, and a *taille per marc* of 86 (2.846 g, and 1.023 g pure silver) until July 1519. Then its fineness was very subtly changed, by just 6 *grains* AR, and its *taille per marc* marginally increased to 92 (2.660 g), thus reducing the fine silver content by 11.73 percent (to 0.903 g), and raising the value of the silver *traite per marc de Troyes* correspondingly by 13.27 percent (from £48.887 to £55.375 *tournois* per *marc* fine silver).

The changes made that year in the primary French gold coin, the *écu au soleil à la couronne* (the French ‘crown’) were even more subtle, if we ignore the first, abortive change: the fineness was reduced from 23 carats 1.5 grains, set in 1494, to 23 carats; and the *taille* was very slightly raised from 70.000 to 71.167 per fine *marc*, thus reducing the gold content by just 3.68 percent. But the *écu*’s value was raised from

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pp. 158-63. In terms of the previously discussed formula for reciprocal relationships, the silver debasement of 11.127% meant an increase of 12.51% in the coined value of the Troy pound of sterling silver, from £2.000 to £2.500; and the gold debasement, of 11.111%, similarly, an increase in the coined value of the Troy pound of fine gold, by 12.50%, from £24.000 sterling to £27.000 sterling:  $\Delta T = [(1/(1-0.1111))] - 1 = 0.125$  or 12.50%.

<sup>35</sup> For this and the Henrician ‘Great Debasement’, see Challis, *Tudor Coinage* (n. 32), pp. 68-72, 81-111; Feavearyear, *Pound Sterling* (n. 33), pp. 48-50, Appendices I-III, pp. 435-39; Challis, ‘Lord Hastings to the Great Silver Recoinage (n. 25)’, pp. 189-217, 228-44, and Appendix 2, p. 720. See also Philip Grierson, ‘The Monetary Pattern of Sixteenth-Century Coinage’, *Transactions of the Royal Historical Society*, 5<sup>th</sup> series, 21 (1971), 45-60, reprinted in Philip Grierson, *Later-Medieval Numismatics (11<sup>th</sup> - 16<sup>th</sup> Centuries): Selected Studies*, Variorum Reprints CS98 (London, 1979), no. XVI.

36s 3d to 40s 0d *tournois* (i.e. £2 *livres*), to effect an overall debasement of 11.34 percent, thus correspondingly raising the value of the gold *traite per marc* fine by 12.77 per cent (from £537.994 to £606.823 *tournois*). Since these changes relatively ‘favoured’ silver, they reduced the bimetallic ratio from 11.684:1 to 10.959:1. Once established in their new format, the gold and silver coinages of France also remained unaltered for a fairly long period of time, more than twenty years, until 1541, just beyond the period of this study, and just a year before Henry VII embarked on his infamous ‘Great Debasement’ (see Tables 1.A, 1.B, and 2).<sup>36</sup>

### **Coinage and monetary changes in the Habsburg Netherlands during the early sixteenth-century**

These French monetary changes of 1519, however, may have prompted the coinage alterations, also fairly minor, that took place in the Burgundian-Habsburg Netherlands just two years later, after more than twenty years of perfect monetary stability. The first Habsburg monetary ordinance, which the government of Charles V proclaimed on 20 February 1521, proved to be abortive, by undervaluing the gold coins. That problem was remedied with the revised ordinance of 15 August 1521, whose monetary details for the new gold and silver coinages are also provided in Tables 1.A, 1.B, and 2.

Those details should be compared with the composition and values of the two primary gold coins, as issued from February 1500: (1) the *toison d’or*, struck at 23 carats 9.5 grains and a *taille* of 54.5 per *marc de Troyes* (4.452g pure gold), with an official value of 8s 4d *groot* Flemish (100d); and (2) the *Philippus* florin, struck at 15 carats 11 grains, 74 per *marc* (2.194 g fine gold), with an official value of 4s 2d (50d) *groot* Flemish.<sup>37</sup> The new 1521 ordinance introduced three new gold coins: (1) the *réal d’or*, of virtually

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<sup>36</sup> Adrien Blanchet and Adophe E. Dieudonné, *Manuel de numismatique française*, 4 vols. (Paris, 1912-36), vol. II: Adolphe Dieudonné, *Monnaies royales françaises depuis Hugues Capet jusqu’à la Révolution* (Paris, 1916), pp. 314-21, for François Ier (1515-47); for the preceding eras of Charles VIII (1483-1498) and Louis XII (1498-1515), see pp. 303-13.

<sup>37</sup> These coinages of Archduke Philippe le Beau were, in fact, first introduced by the ordinance of 10 April 1496 (ns): (1) the *toison d’or*, of the fineness and weight just specified, but with an official value of just 8s 0d *groot* (96d); and (2) the *Philippus* florin, with a fineness of 16 carats and the same *taille* of 74 per *marc*, and with half the value of the *toison d’or*, i.e. 4s 0d (48d) *groot* Flemish. For the text of this

pure gold (23 carats 9.5 grains: 46 struck to the *marc de Troyes*, each with 5.275 g fine gold), valued at 10s 7d (127d) *groot* Flemish, in the August 1521 ordinance; (2) the *demi-réal*, but with only 18 carats (70.125 per *marc*, each with 2.618 g. fine gold), valued at 5s 3d (63d) *groot*; and (3) the famous *Carolus florin*, named after Emperor Charles V, at just 14 carats (84 per *marc*, each with 1.700 g fine gold), valued at 3s 6d (42d) *groot*. In accepting certain foreign gold coins, the government raised the exchange value of the French *écu au soleil* to 76d *groot* (from 72d in the February ordinance); and those of the Italian ducats and florins, to 80d *groot*.<sup>38</sup> The issue of this new florin, the only new gold coin henceforth to have any widespread circulation, in effect meant a 7.75 percent *affaiblissement* of the gold coinage (in relation to the former St. Philip florin, now worth 54d *groot*), which correspondingly raised the value of the gold *traite per marc* by 8.40 percent (from £23.246 to £25.200 *groot per marc de Troyes*).

The gold coin values proclaimed in August 1521 ordinance were confirmed in Habsburg ordinances of 1522 and 1524; but then, with a decree dated 25 November 1525, were increased by ten percent. The following year, on 10 December 1526 (amended on 1 January 1527 ns), the Habsburg government in Brussels decreed that the former rates – not those of 15 August 1521, but the original rates of 4 February 1521 – were

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ordinance, see Louis Deschamps de Pas, ‘Essai sur l’histoire monétaire des comtes de Flandre de la Maison d’Autriche et classement de leurs monnaies (1482-1556): Philippe-le-Beau (1482-1506): Suite’, *Revue numismatique*, nouvelle série, 15 (1874-1877), 89-93; and minting commenced on 20 May 1496. The subsequent changes to reduce the fineness of the *Philippus* florin, and to raise the official exchange values of both gold coins, proclaimed on 20 February 1500 (ns), are not provided in any ordinance or text published by Deschamps de Pas, though he does cite a subsequent ordinance of 2 July 1504 confirming these changes and values (pp. 98-105). These changes are, however, perfectly evident, and with the February 1500 dating, in the mint accounts for Bruges, from 2 May 1499 to 5 September 1500, and for Antwerp, from 3 June 1499 to 8 August 1500, in: Algemeen Rijksarchief van België, Rekenkamer (AR Rek), registers nos. 18,122-24 and 17,822: 11-13, respectively. See n. below.

<sup>38</sup> Text of the two 1521 ordinances in Louis Deschamps de Pas, ‘Essai sur l’histoire monétaire des comtes de Flandre de la Maison d’Autriche et classement de leurs monnaies (1482-1556): Charles-Quint (1506-1556)’, *Revue belge de numismatique*, 32 (1876), 73-79, 82-83. The term *carolus* had, however, been used earlier as the new alternative name for the *Philippus* florin, in an ordinance of 2 January 1517 (ns): ‘..ung autre denier d’or qui se nommera carolus, ou lieu du philippus d’or, de tel poix, alloy et sur le mesme piet et instructions que ledit philippus a esté forgé jusques à present; et vaudra icellui carolus iiii s. et ii d. gros [de Flandres].’ *Ibid.*, p. 68.

to be restored from 1 March 1527, so that the gold *carolus* should then circulate at 40d *groot*.<sup>39</sup> All of these changes are listed in a monetary appendix to Van der Wee's *Growth of the Antwerp Market*, suggesting that the restored and lower rates, those of February 1521, remained in force from 1527 until the end of Charles V's reign. There is, however, no compelling evidence that the reduced exchange rates for gold coins did remain in force or were ever observed. Indeed had these gold coinage rates prevailed, they would have been substantially below the free-market rates for gold bullion at the Antwerp Fairs, as much as 10 percent below in 1536-37.<sup>40</sup> Table 4 indicates, however, that the official gold coinage rates decreed on 15 August 1521 were usually very close, though just above, the free market rates, as would be expected. Normally, gold coins commanded a premium or *agio* over bullion (ingots) that reflected their greater utility, with lower transaction costs in effecting commercial transactions, because the coin's official stamp was a guarantee of its value, while the value of bullion ingots had to be determined by using scales and touchstones.<sup>41</sup>

Table 4 also reveals why the government of Charles V felt compelled to alter the coinages in 1521, in two stages, to alter the bimetallic ratio in favour of gold. For the free market price of gold had been rising from late 1516, when, in fact, the French government had authorized a rise in the value of the *écu au soleil* from 36s 3d tournois to 40s 0d tournois.<sup>42</sup> The need for the subsequent additional ordinances of 1522-26 can

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<sup>39</sup> Deschamps de Pas, 'Histoire monétaire: Charles Quint (n. 38)', pp. 82-86. From Nov. 1525 to 10 Dec. 1526 the gold *réal* was supposed to circulate at 132d. *groot* (raised from 127d) and the gold *carolus* at 44d (raised from 42d). From 10 Dec. 1526 to 1 Mar. 1527 the gold *réal* was to circulate at 136d, and thereafter for only 120d. *groot*; the gold *carolus*, for 45d. and thereafter for only 40d. *groot*.

<sup>40</sup> Van der Wee, *Antwerp Market* (n. 1), vol. I, Tables XV-XVI, pp. 128-34.

<sup>41</sup> That difference was reflected in the added costs in minting, those of brassage and seigniorage, which represented the difference between the mint's price in purchasing bullion per *marc* and the coined or *traite* value of the *marc* of fine metal, silver or gold. See Munro, *Wool, Cloth, and Gold* (n. 24), pp. 25-6; John Munro, 'Deflation and the Petty Coinage Problem in the Late-Medieval Economy: The Case of Flanders, 1334 - 1484,' *Explorations in Economic History*, 25 (October 1988), 387-423; reprinted in John Munro, *Bullion Flows and Monetary Policies in England and the Low Countries, 1350 - 1500*, Variorum Collected Studies series CS 355 (Aldershot, 1992).

<sup>42</sup> Denis Richet, 'Le cours officiel des monnaies étrangères circulant en France au XVIe siècle', *revue historique*, 225 (1961), 377; Frank Spooner, *The International Economy and Monetary Movements*

be seen in the further rise in gold rates on the Antwerp market; but after 1526-27, the free market rates fell to just 92.1 percent of the gold coin rates decreed in August 1521, then rising slowly to peak again at 101.4 percent in 1536-37. For that reason these official 1521 rates have been employed for the years 1521-40 in the following tables 5 and 6.

The Habsburg monetary ordinances of 1521 made only slight changes to the Low Countries' s silver coinages. These changes appear to be more complex than they really were, because the ordinance had also instituted a new standard for silver fineness: *argent fin* (AF) or 100 pure percent silver, to displace the very old and traditional French-based system of *argent-le-roi* (95.833 percent pure), even though the French monetary authorities themselves continued to use the latter AR standard. To add to the confusion, the new Habsburg mint standard employed the very same subdivisions of 12 deniers, with 24 grains per denier.<sup>43</sup> Two new silver coins were introduced to match the gold, in name: (1) the single *Carolus* or *demi-réal* of 5 deniers 12 grains *argent fin* (45.833 percent pure), with 78.5 struck to the *marc AF* (thus with 1.429 g pure silver); (2) the double *Carolus* or *réal*, at 11 *deniers 5 grains AF*, slightly finer than sterling silver, at 93.40 percent purity, with 80 struck to the *marc AF* (2.858 g pure silver). Very few of these high-value silver coins were, or had been struck; but even fewer of the very low-value small denomination coins were struck, in part because their high base-metal (copper) contents gave them greater durability, but more so because the

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*in France, 1493 - 1725* (Cambridge, 1972), p. 121.

<sup>43</sup> See note 39, for the 20 February 1521 ordinance: 'ung denier d'argent qui se nommera double karolus, et aura cours pour six gros de Flandres.... tenant unze deniers cinq grains de fin argent en alloy..'. The first indication of this change comes in the Bruges mint account for 17 May 1503 to 25 May 1504, in specifying the fineness of the double patard: 7 deniers 16 grains *argent fin* or 8 deniers *argent-le-roy*; and that for the single patard: 3 deniers 20 grains *argent fin*, or 4 deniers *argent-le-roy*. But the official ordinances had continued to use the *argent-le-roi* standard up to 1520, though usually just specifying that the previous ordinances were to remain in force. For the text of the April 1496 ordinance specifying the silver fineness in *argent-le-roy*, see n. 29 above. According to Dieudonné, *Monnaies royales françaises* (n. 36, vol. II, p. 34: 'Pour l'argent, les évaluations, soi-disant rapportées «au fin», portaient de ce qu'on appelait l'*argent-le-roi* (A.R.), c'est-à-dire d'un métal préalablement allié, ou supposé allié, aux 23/24 d'argent et 1/24 cuivre (0,958). On ne sait pas toujours, quand les textes parlent d'argent pur, s'ils visent l'argent fin ou l'argent-le-roi. L'usage de l'A.R. aurait été abandonné, d'après Abbot de Bazin ghen, vers le milieu du XVIIe siècle.'

combination of high-base metal contents and low value provided strong disincentives against either hoarding or exporting these coins abroad (see Table 2).<sup>44</sup>

The most important and most widely circulated coin was now the *patard*, or double *groot* (later better known as the *stuiver*), which had displaced the single *groot* as the standard coin and ‘link money’ with the 1496 monetary ordinance. It retained its former weight, with 80 struck, as well, to the *marc AF* (3.059 g), but with a very slightly reduced fineness: 3 deniers 17 grains AF (= 3 deniers 21 grains *argent-le-roi*, compared to the 4 deniers *AR* fineness of the previous *patards*, as struck from 20 February 1500).<sup>45</sup> Thus each new *patard* contained 0.945g pure silver, compared to 0.977g pure silver in the old, for a relatively minor debasement of just 3.26 percent, thus correspondingly raising the coined value of the silver *traite per marc argent fin* by 3.37 percent, from £2.087 *groot* (£2.000 *groot* for the *marc argent-le-roy*) to £2.157 *groot* Flemish.<sup>46</sup> Consequently, since these relative changes ‘favoured’ gold over silver, the bimetallic ratio, in terms of the old *Philippus* and new *Carolus* florins and the silver *patards*, rose from 11.139:1 to 11.681:1, and thus above the English bimetallic ratio (11.157:1), a change that helps to explain the *relative* decline in the Habsburg Low Countries’s silver-coinage mint outputs after 1521. These 1521 monetary ordinances represented both the first and last major coinage alternation undertaken during the reign of Charles V. Hence

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<sup>44</sup> See Table 2, on Silver Coinage, for the relative weights and fineness of the petty coins – the single *groot*, the demi-*groot*, the quarter-*groot* (*gigot*), and the quadruple and double mites (with 24 mites per denier or penny *groot*), for one of their rare coinage issues in 1507-08. Note that the lower the denomination, the greater the *taille* (i.e. the lower the weight) and the higher the base-metal content, the more expensive it was to mint such petty coins; and thus the higher *brassage* fee required necessarily meant a higher *traite* or coined value of the *marc argent-le-roi*. For the economics of using such coins, see Munro, ‘Deflation and the Petty Coinage Problem (n. 41)’, pp. 387-423.

<sup>45</sup> The original *patard* or double *groot* of this series had first been issued with the April 1496 monetary ordinance, which then prescribed a slightly higher weight, with a *taille* of 79 per *marc* (the same as for the double *patard*). On 20 February 1500, the mints of Antwerp and Bruges were ordered to raise the *taille* to 80 per *marc*, while retaining the same fineness of 4 deniers *argent-le-roy*; and that *taille* and fineness were maintained up to the 1521 ordinances. See nn. 37-38 above, and Table 1.

<sup>46</sup> Note that the formula for the reciprocal relationship between debasement and increased coinage values still holds true, as it must:  $\Delta T = [1 / (1 - 0.032609)] - 1 = 0.033707$ , or  $\Delta 3.37\%$

his silver and gold coinages remained essentially unchanged after 1527, with only minor changes in silver (July 1548) and gold (March 1553), until his abdication in September 1556 (retiring to the Yuste monastery).

### **Coinage and the Price Revolution: the Bodin - Malestroit debates**

While these coinage changes are very important for understanding the price and wage changes in the following tables, they have a further, indeed greater, significance. While coinage debasements had played a very major role in the inflations and oscillating price levels of the chaotic later Middle Ages, especially after the Black Death, clearly they exerted virtually no influence for the onset of the sixteenth-century Price Revolution; and the only one that subsequently did play a significant, if purely, temporary and purely regional role was the Henrician ‘Great Debasement’ of 1542-1552.<sup>47</sup> For many contemporary observers in the sixteenth century, and earlier, coinage debasements were generally viewed as the chief culprit (along with greedy ‘monopolists’) to be blamed for price rises. Certainly for much of the later-medieval era, in the Low Countries and France especially, such silver debasements had been the principal cause of periodic, if temporary, inflations. In the 1560s, the French economist Malestroit had reiterated that traditional view to explain the now readily apparent Price Revolution. But his chief opponent, the philosopher-economist Jean Bodin won a major victory over Malestroit in establishing what now may be regarded as the modern foundations of the Quantity Theory of Money, even if he was in error in ascribing the *initial* causes of that inflation’s onset to the influx of ‘Spanish treasure’, for reasons already elaborated.<sup>48</sup>

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<sup>47</sup> See n. 32 above; and J. D. Gould, *The Great Debasement: Currency and the Economy in Mid-Tudor England* (Oxford, 1970), pp. 34-86. For the late-medieval debasement-induced inflations, see the collected essays in John Day, *The Medieval Market Economy* (Oxford, 1987); and Munro, *Bullion Flows and Monetary Policies in England and the Low Countries* (n. 41); and also (not in this volume) John Munro, ‘Mint Outputs, Money, and Prices (n. 12)’, pp. 31-122.

<sup>48</sup> See George Moore, ed., *The Response of Jean Bodin to the Paradoxes of Malestroit and The Paradoxes, translated from the French Second Edition, Paris 1578* (Washington, 1946). See also Jean-Yves Le Branchu, ed., *Écrits notables sur la monnaie, XVIe siècle: De Copernic à Davanzati reproduits, traduits, d’après les éditions originales et les manuscrits, avec une introduction, des notices et des notes*, Collection des principaux économistes, nouvelle édition, 2 vols. (Paris, 1934): *Les paradoxes du Seigneur de Malestroict, conseiller du Roy, et Maistre ordinaire de ses comptes, sur le faict des monnoyes, presentez à sa Majesté, au mois de mars MDLXVI* (Paris, 1566); *La response de maistre Jean Bodin advocat en la cour*

## THE PURCHASING POWER OF COINS AND WAGES IN THE HABSBURG NETHERLANDS, 1501 - 1540

### Tables of commodity prices and wages in quinquennial means (arithmetic and harmonic)

That inflation, during the first two decades of the onslaught of the famous Price Revolution, is clearly evident in all the following tables on commodity prices, and the related purchasing power of coins and wages in the southern Low Countries and southern England. Some further explanation of those tables is now required. The tables, for both regions, are so numerous that considerations of space, and the reader's patience, do not permit the presentation of annual data for this Age of Erasmus, and beyond, for the first four decades of the sixteenth century. Therefore, the price and wage data are presented in quinquennial (five-year) means, and means that begin with years 1 and 6 in each decade, rather than with the years 0 and 5, in the previous study in *CWE* 2.<sup>49</sup> For those years with missing commodity price and/or wage data, an interpolated estimate was made by taking the simple arithmetic mean of the values for the two adjacent years or by estimating the proportional differences for two or more years of missing data.<sup>50</sup>

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*au paradoxe des monsieur de Malestroit touchant l'enchérissement de toutes choses et le moyen d'y remédier* (Paris, 1568). Some modern economists would, however, give priority to some contemporary Spanish economists; but their writings never had the impact of those produced by Jean Bodin. See Marjorie Grice-Hutchison, *The School of Salamanca: Readings in Spanish Monetary Theory, 1544 - 1605* (Oxford, 1952); and for the modern views on the role of Spanish silver in the Price Revolution, see Georg Wiebe, *Zur Geschichte der Preisrevolution des XVI. und XVII. Jahrhunderts*, Staats- und sozialwissenschaftliche Beiträge, II:2 (Leipzig, 1895); and Earl Hamilton, 'American Treasure and Andalusian Prices, 1503-1660: A Study in the Spanish Price Revolution,' *Journal of Economic and Business History*, 1 (1928), reprinted in P.H. Ramsey, ed., *The Price Revolution in Sixteenth-Century England* (London, 1971), pp. 147-81; Earl J. Hamilton, 'American Treasure and the Rise of Capitalism, 1500-1700,' *Economica*, 27 (Nov. 1929), Hamilton, *American Treasure and the Price Revolution* (n. 21). For contemporary English Tudor views, see Outhwaite, *Inflation in Tudor and Early Stuart England* (n. 13), pp. 17-25.

<sup>49</sup> As the recent debate about the arrival of this Millennium has made clear, decades, as well as centuries and millenia, all must begin with the year 1, not 0.

<sup>50</sup> If data were missing for two or more years the interpolation involved calculating proportional differences in values between the year before and the year after the missing data. Thus, if the commodity price for the year 1516 was 10d and that for the year 1519 was 12d, the estimate made for year 1517 would be:  $10 + 1/3*(12 - 10) = 10.667d$ ; and that for year 1518 would be:  $10d + 2/3*(12 - 10) = 11.333d$ . In algebraic form, the formula to interpolate the missing data, year by year, is;  $X + n/Y*(Z - X)$ , in which  $X$  is the value for the year before the missing data,  $Z$  is the value for the year after the missing data,  $Y$  is the number of years from year  $X$  to year  $Z$ , and  $n$  is the number of the year after year  $X$



The presentation of these quinquennial means will undoubtedly prove confusing for most readers, without the following explanations. While the five-year averages for the commodity price and wage data are all calculated by taking simple arithmetic means, the averages of *quantities* that could be purchased the various coins or by daily/annual wages have been computed as *harmonic means*: i.e. ‘the reciprocal of the arithmetic mean of the reciprocals of the individual numbers in a given series’.<sup>51</sup> The mathematical expression for this harmonic mean is:

$$HM = 1 / [ \sum (1/r_1 + 1/r_2 + 1/r_3 + \dots + 1/r_n) ] / N$$

Thus the reciprocal of each item is computed; then the sum ( $\Sigma$ ) of the total number of these reciprocals, in each five-year period, is divided by  $N$  = the total number of items so averaged; and the reciprocal of this amount  $x (=1/x)$  is then computed to obtain the harmonic mean. This unusual ‘harmonic’ form of the mean comes from the method necessarily required to compute the quantities so purchased: i.e. by taking the reciprocal of the price per unit, and then multiplying that result by the face-value of the coin, or by the daily nominal (money wage). For example, in Brussels, in 1501, eggs cost 10.191d *groot* Flemish per hundred, and thus 0.1019d *groot* per egg. With a single penny (pence) or 1d *groot* one could thus purchase  $1/0.1019 = 9.812$  eggs; and with the Burgundian silver *patard* (*stuiver* or *double groot*, worth 2d. *groot* Flemish) one could acquire double that amount, or 19.625 eggs. The procedure for calculating the quinquennial means – arithmetic means for the prices but harmonic means for quantities so purchased can be seen in the following in- text table A:

**Prices of Eggs in Brussels, in d *groot* Flemish and Quantities purchased with silver coinage, 1501 - 05**

<b>Year</b>	<b>Price per 100 in d <i>groot</i> Flemish</b>	<b>Price per egg in d <i>groot</i> Flemish</b>	<b>Quantity Bought with 1d <i>groot</i></b>	<b>Quantity Bought with 2d <i>groot</i></b>	<b>Quantity Bought with a Mason’s Daily Wage: 8.333d <i>groot</i></b>

<sup>51</sup> F.C. Mills, *Introduction to Statistics* (New York, 1956), pp. 108-12, 401.

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<b>1501</b>	10.191	0.102	9.812	19.625	81.771
<b>1502</b>	10.947	0.105	9.527	19.054	79.39
<b>1503</b>	10.802	0.108	9.257	18.515	77.145
<b>1504</b>	11.108	0.111	9.003	18.005	75.023
<b>1505</b>	11.413	0.114	8.762	17.523	73.014
<b>1501-05 Mean</b>	10.802	0.108	9.257	18.515	77.145

**Sources:** See Table 6.E

In this table, the average prices given in columns A and B are the simple arithmetic means of the prices for each of the five years; but the averages in columns C, D, E – i.e. the five-year average of the quantities of eggs so acquired in each of these five years – are the harmonic means, as explained above. One can test the validity of this method by calculating the means of the price-relatives or index numbers: and those for the quantities so purchased agree only with the independently calculated *harmonic means*, not with the arithmetic means.

In the sources used for these tables, the actual prices were recorded in the standard money-of-account for the duchy of Brabant: in pounds, shillings, and pence *groot* of Brabant. From the Burgundian monetary unification and reform of 1434-35, this money-of-account had been and remained tied to the *pond groot* of the adjacent (and economically more advanced) county Flanders by the fixed ratio of 1.5:1, so that 30s *groot* Brabant = 20s *groot* Flemish; and the silver *patard*, worth 2d. *groot* Flemish, was thus worth 3d *groot* in Brabant. As in the previous study, the Brabantine prices have been converted into their Flemish *groot* equivalents by this ratio (i.e. by dividing prices by 1.5).

Annual changes in all the commodity prices are demonstrated by using price-relatives, in what is more commonly known as a Consumer Price Index -- and in this study as a ‘Basket of Consumables’ Price Index. For the southern Low Countries, chiefly for the Antwerp-Lier-Mechelen-Brussels region of southern

Brabant, this specific price-index employed is the one that Herman Van der Wee constructed on the model of the well known Phelps Brown and Hopkins 'Basket of Consumable's price index, utilizing as far as possible their selection and weighting of the commodities (Table 5).<sup>52</sup> Van der Wee had, of course, presented his prices in Brabant money-of-account (i.e. in *d groot* Brabant), but I have converted the totals into *d groot* Flemish, by the previously discussed ratio of 1.5:1. For this study, the base, for both regional price indices, has also been changed to 1501-05, i.e. the first quinquennium of this 'Age of Erasmus.' As the following set of tables 6.A - 6.I indicates, the annual prices for each of the ten Brabantine commodities in this 'basket of consumables' was summed and then divided by five to obtain the arithmetic mean price; and these mean prices for the ten commodities were summed to obtain the total mean value of the entire basket (in *d groot* of Brabant and Flanders). The annual values of the basket in these Flemish *d groot*, from 1501 to 1540, were then divided by this mean value for 1501-05 to produce the annual and quinquennial index numbers or price-relatives (i.e. to express, in effect, what percentage each was in relation to that mean value for 1501-05).

Both Van der Wee and Phelps Brown & Hopkins had, however, chosen another period for their base: 1451-75 = 100, as the base recommended in the conventions of the International Price History Commission (1954) as an ideal period of relatively stable prices that could serve as an anchor for both medieval and early-modern surveys of European prices. This period 1451-75 also happens to be, as noted above, a deflationary era, one with unusually low prices. Because of the widespread prominence of these two price indices in the historical literature, I have chosen to present the values for both base periods in this Table 4, and in some others that follow.

In Tables 5 and 12, the Grains sub-index of the Brabantine 'basket of consumables' is composed of rye and barley, which indeed were relatively more important consumer grains for the Low Countries than wheat was for England, in this era. The Meat-Fish-Dairy Products sub-index consists of beef, herrings,

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<sup>52</sup> Van der Wee, 'Prijzen en lonen als ontwikkelingsvariabelen (n. 17),' pp. 413-35. For the Phelps Brown & Hopkins index, see above n. 17. See below pp. and n. for a further detailed discussion and comparison of the Van der Wee and Phelps Brown & Hopkins price indices.

cheese, and butter; and the Industrial Products sub-index consists of charcoal, tallow candles, cheap woollen cloth, and linen cloth. The specific units and quantities of each of these ten commodities are indicated in the top row of the column: in litres, kilograms, metres, or number, respectively. As Table 5 indicates, the difference in the weighting between the two base periods is not very significant, and does indicate the longer term stability and thus viability of this ‘basket of consumables’. For the original base period of 1451-75, for which the entire basket had a value of 155.02d *groot* Flemish, the Grain sub-index accounted for 35.32 percent of the total basket, by value; the Meat-Fish-Dairy Products sub-index accounted for 38.87 percent of the basket; and the Industrial Products sub-index, for the remaining 25.81 percent. In the subsequent base period of 1501-05, for which the entire basket had the significantly higher total value of 194.47d *groot* Flemish (higher by 25.45 percent), Grains accounted for 38.31 percent (reflecting the slightly higher relative value of grains in this period); Meat-Fish-Dairy Products, for 36.94 percent; and Industrial Products, for 24.75 percent.

Each of the following tables in the set of Tables 6.A-6.I, for commodity prices in the Antwerp-Lier-Mechelen-Brussels region of the southern Low Countries, has 15 columns, as follows; and the values, for each column, for the eight quinquennia, from 1501-05 to 1536-40, are presented in the rows:

- (1) The years of these eight quinquennia, 1501-05 to 1536-40.
- (2) The mean price per metric unit (litre, kilogram) or number in d *groot* Flemish (in pence) for each of these eight quinquennia.
- (3) The *harmonic* mean number of units (in litres, kilograms, numbers) that might have been purchased with the Burgundian-Habsburg silver *patard* or double *groot* (2d).
- (4) The *harmonic* mean number of these units so purchased by the French silver *blanc à la couronne* or *douzain*, worth 12d. *tournois*.
- (5) The *harmonic* mean number of these units so purchased by the English silver sterling penny (1d).
- (6) The *harmonic* mean number of these units so purchased by the Burgundian-Habsburg gold florin *St*.

*Philip* or *philippus*, worth 50d *groot* Flemish from 1500 to 1520 and (officially) 54d *groot* in 1521-40.

(7) The *harmonic* mean number of these units so purchased by the Burgundian-Habsburg gold *Carolus* florin, first issued in February 1521, with an official value of 40d *groot* Flemish (60d *groot* Brabant), but raised to 42d *groot* Flemish in August 1521 (the value used throughout these tables).

(8) The *harmonic* mean number of these units so purchased by the French gold *écu au soleil à la couronne*, worth 71d *groot* from 1500-18, 72d in 1519-20, and 76d *groot* from 1521-40.

(9) The *harmonic* mean number of these units so purchased by Italian gold ducats and florins, worth 79d *groot* Flemish from 1500-20 and 80d *groot* from 1521-40.

(10) The *harmonic* mean number of these units so purchased by English gold angel-nobles, worth 116d (9s 8d) *groot* Flemish from 1500-20 and 119d (9s 11d) *groot* from 1521-40, in each of these quinquennia..

(11) The arithmetic mean of the daily summer wage of a master mason in Antwerp, in d *groot* Flemish, in each of these quinquennia.

(12) The *harmonic* mean number of these commodity units (litres, kilograms, numbers) that could have been purchased with that mason's daily summer wage, in each quinquennium.

(13) The index numbers for the quantity purchased with the silver *patard*, with the base 1501-05 = 100, in each quinquennium (quantity index as a *harmonic* mean) .

(14) The arithmetic mean index numbers of price-relatives for the price of this commodity, with the same base, 1501-05 = 100 (as constructed and shown in Table 4), for each quinquennium.

(15) The value, in d *groot* Flemish, of a 'basket of consumables' in southern Brabant (the Antwerp-Lier-Mechelen-Brussels region).

(16) The Van der Wee Commodity Price Index: the index numbers or price-relative for this 'basket of consumables', with the same base, 1501-05 = 100.

These nine commodity price tables, for the southern Low Countries (Brabant region), are contained in the following set entitled 'The Purchasing Power of Coinages and Wages in the Southern Low Countries'.

Brief notes are supplied for each, on the nature or composition, origin, and units of measurement of the commodities so priced.<sup>53</sup>

**Table 6.A: Rhine wine:** young, good quality red wines, purchased by various ecclesiastical institutions, hospitals, the Lier Poor Relief, in quantities measured by the *gelte* = 2.50 Imperial quarts = 2.840 litres. The recorded prices usually centred on the Easter season.

**Table 6.B: Butter:** fresh, salted local butter, purchased by various ecclesiastical institutions, especially the Béguinage of Brussels, throughout the calendar year, by the 100-*pond* weight of Brussels = 103.103 lb. avoirdupois = 46.767 kilograms.

**Table 6.C: Salted beef:** purchased by hospitals and ecclesiastical institutions in Mechelen, during the November season for slaughtering cattle, by the 100-*pond* weight of Mechelen = 103.451 lb. avoirdupois = 46.9247 kilograms.

**Table 6.D: Herrings, Flemish Red:** dry smoked red herrings, chiefly from the adjacent North Sea coast of Flanders and Zealand, purchased in both Brussels and Mechelen during the Lenten season, by hospitals, the Poor Relief, and various ecclesiastical institutions, by the *stroof* = 500 red herrings.

**Table 6.E: Eggs:** evidently local, fresh eggs that the Brussels Béguinage purchased from the Brussels region, throughout the calendar year, by the hundred.

**Table 6.F: Wheat:** up to 1509 (from, in fact, 1427), as purchased by the Lier Poor Relief on the Lier market, excluding taxes, as the unweighted arithmetic means of quarterly prices; from 1509 to 1540 (to 1600), the prices are those recalculated from the ‘official weekly bread weights’, again as an unweighted annual mean price. For all price series, the unit is the *viertel* of Lier = 86.06 litres; and note that the bushel = 36.369 litres (i.e. 2.381 bushels per *viertel*). Though wheat prices were not included in the previous study (in *CWE 2*), nor in Van der

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<sup>53</sup> The sources of the data are given in each of the following tables.

Wee's composite price index, their inclusion here may be justified by the comparison with the wheat price series in Table 11.D, for southern England.

**Table 6.G: Peas:** dried peas, purchased on the Mechelen market, again by the Lier Poor Relief, and also by various other institutions (especially hospitals in both Lier and Mechelen), by the *viertel* of Mechelen = 86.499 litres (i.e. 2.378 bushels). Prices are the unweighted arithmetic mean of sales from December to March of each year. This price series, also not included in the previous study, are again provided to offer a comparison with the price series for peas in Table 11.E, for southern England.

**Table 6.H: Loaf Sugar:** chiefly fresh cane sugar imported from the Portuguese islands of Madeira, the Azores, and the Spanish Canaries, as sold on the St. Bavo or Bamis market of the Antwerp Fairs, in October of each year. As noted in the previous study, these commodities experienced one of the most dramatic price-declines over the half century, because the recent Iberian colonization and rapid development of sugar plantations on these Atlantic islands had so dramatically increased the supply of this formerly luxury commodity.<sup>54</sup>

**Table 6.I: Tallow Candles:** those that various ecclesiastical institutions in Brussels, Antwerp, Lier, and Mechelen purchased, during the autumn and winter months, by the *steen* (stone) of 8 lb = 8.2722 lb avoirdupois (as the average weight of these towns's *steen* weights) = 3,752.194 g.

#### TEXTILES AND TEXTILE PRICES IN THE SIXTEENTH-CENTURY NETHERLANDS

The remaining three tables concern textiles made and sold in the Low Countries. Textile prices in themselves are of little use to the reader, unless three conditions – those supplied in these three tables – can be met:

(1) that the textile prices are consistent, from year to year, in their origins and in their archival documentation, offering full confidence that the textiles are, if not precisely identical, closely similar,

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<sup>54</sup> Van der Wee, *Antwerp Market* (n. 1), vol. I, Appendix 26, pp. 306-08, 318-24; cf. *CWE* 2, p. 314.

produced by the same or same type of manufacturer and destined for the same type of consumer each year;

(2) that the composition, dimensions, and weights of the textiles are fully documented; and

(3) that the textile prices may be compared readily with other consumer prices and wages in the same year and location.

**Table 6.J: Woollen broadcloths from Ghent and Mechelen:** with the following columns and data:

- (1) The eight quinquennia for this ‘Age of Erasmus’, from 1501-05 to 1536-40, to provide the following mean values.
- (2) The quinquennial arithmetic mean prices of Ghent’s *dickedinnen* broadcloths, priced in pounds *groot* Flemish. The most renowned of Ghent’s medieval and Renaissance textiles, it was produced in the format (wool composition, dimensions, weight, finishing) indicated in Table 7 from about the mid-fourteenth to the mid-sixteenth centuries. Its descriptive name means literally ‘thick and thin’ and evidently had its origin in the double-twilled nature of the weave (two wefts over and under individual warp yarns).<sup>55</sup>
- (3) The quinquennial arithmetic mean prices, in Flemish pounds *groot*, of Ghent’s next most famous woollen cloth, the *strijpte laken*, or ray cloth: a cloth whose warp yarns were dyed in colours, often varying colours, that were different from those of the weft yarns, to produce the desired striped effect. Some historians, regrettably, have incorrectly referred to these as ‘cheap cloths’, a description clearly contradicted by the comparative prices in this table.
- (4) The quinquennial arithmetic means prices of Mechelen’s currently fashionable woollen broadcloth,

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<sup>55</sup> The warp yarns, about 30 or so metres in length, are those that are wound on the warp-roller beam at the rear of the broadloom and then stretched through heddles to be wound on the cloth-beam in the front of the loom. Foot-powered treadles raise and lower sets of heddle harnesses to separate the warps, and thus to allow the passage of the weft-yarns (carried by a wooden shuttle) between alternating warps; and the wefts are then ‘beaten up into the fell of the cloth’ by a laysword. For a description and analysis of these cloth-making processes, see John Munro, ‘Textile Technology,’ in Joseph R. Strayer, et al., eds., *Dictionary of the Middle Ages*, 13 vols., Vol. 11: *Scandinavian Languages to Textiles, Islamic* (New York, 1988), pp. 693-711; reprinted in Munro, *Textiles, Towns, and Trade* (n. 14).



the *Rooslaken*, which, however, was normally dyed black, at least in this era.; and again the prices are given in Flemish pounds *groot*, converted from the actual prices in Brabant pounds *groot*. This *rooslaken* It was probably similar in dimensions, composition, and weight to the Mechelen *Gulden Aeren*, in Table 7 below, though evidently of lower value; and, as will be noted, these unquestionably very fine woollens were relatively cheaper than those from Ghent.

- (5) The quinquennial mean values of the Brabant ‘basket of consumables’, the same ‘basket’ appearing in the previous tables, priced in d *groot* Flemish.
- (6) The relative-prices of price-indices of this ‘basket of consumables’, with the mean for the first quinquennium 1501-05 serving as the base 100 (so that price-indices that follow are, in effect, percentages of this mean value).
- (7) The daily summer wage of a master mason in Antwerp, also in d *groot* Flemish.
- (8) The quinquennial mean number of these daily wages (i.e. the sum of a master’s summer wages for that number of days) that would have been required to purchase a single Ghent *dickedinnen*, of the composition, dimensions, and weight indicated in Table 7 below. To have applied the previously used method of computing the purchasing power of wages would have been absurd: for, in 1535 for example, an Antwerp mason’s daily summer wage earnings would have allowed him to purchase only 0.0030 Ghent *dickedinnen*, or about 0.064 metre of cloth (were that possible, with 21.0 metres for the full sized cloth).<sup>56</sup>
- (9) The quinquennial mean number of daily wages required to purchase a single Ghent *strijpte laken* (rayed cloth).
- (10) Similarly, the quinquennial mean number of these daily wages required to purchase a single Mechelen *rooslaken*.

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<sup>56</sup> The daily summer wage was 10.333d. and the full-sized *dickedinnen* was then worth £14.150 or 3,396 d *groot* Flemish: thus  $10.333/3396 = 0.0030427 * 21.0 = 0.0639$  metre.

- (11) The quinquennial mean value of a single Ghent *dickedinnen* in terms of the number of these Brabantine ‘basket of consumables’: i.e. how many of these baskets, summed in value, would equal the value of this broadcloth, on average, for each five year period.
- (12) The quinquennial mean value of a single Ghent *strijpte laken* similarly in terms of this ‘basket of consumables’.
- (13) The quinquennial mean value of a single Mechelen *rooslaken*, in terms of this same ‘basket of consumables’

The cloth prices are taken from the annual civic treasurers’ accounts for Ghent and for Mechelen, which list the specific woollen cloths, with their prices (often also with their finishing costs, included in these prices), which the town government purchased, from various named drapers, to be given on festive occasions to the leading town government officials. These specific cloths were purchased annually for the town’s *burgermeesters* and *schepenen* (*échevins*, or aldermen); and each of these woollen broadcloths would produce, on average, three full dress suits. So richly detailed are these financial accounts that the reader can be fully assured that the cloths had the same type of producers and the same recipients each year, and that these woollens were unvarying in their composition and dimensions (see Table 7).

**Table 6.K: A comparison of the values of Hondschoote says and Ghent *dickedinnen* woollens:**

As the preceding Table 6.J makes abundantly clear, these woollens from Ghent and Mechelen were articles of very high-status luxury consumption, in that their purchase would have required more than a master mason’s annual money-wage income (wages for about 210-220 days); and indeed in 1501-05 a Ghent *dickedinnen* would have cost that Antwerp mason about two years’ wages. This table therefore makes a comparison of these cloth values with textiles of much more popular consumption, the far cheaper worsted-style textiles whose purchase would have cost that mason less than two weeks’ daily wages. As one may also see from Table 7 these worsted-style says (*sayes*) were also far lighter, and much less durable textiles than

the true woollens.<sup>57</sup>

Table 6.K has the following format, in terms of its columns:

- (1) Individual years – without any quinquennial means, from 1535 to 1544, since data on Hondschoote say prices are available only for these few years.
- (2) The annual prices of Hondschoote single says, in pounds *groot* (decimal) Flemish.
- (3) The annual prices of Hondschoote double says (twice the length: see Table 7) again in pounds *groot* Flemish.
- (4) The annual prices of Ghent's *dickedinnen* woollen broadcloths, in pounds *groot* Flemish.
- (5) The daily summer wage, year by year, of an Antwerp master mason, in d *groot* Flemish.
- (6) The number of this mason's daily summer wages that would have been required to purchase a single Hondschoote 'single say'.
- (7) The number of these daily wages required to purchase a single Ghent *dickedinnen*.
- (8) The value, year by year, of the Brabantine 'basket of consumables', in d *groot* Flemish.
- (9) The equivalent value of the Hondschoote single say in terms of the number of such 'baskets of consumables' whose total cost would equal the price of the say.
- (10) Similarly, and for comparison, the equivalent value of a Ghent *dickedinnen* in terms of the number of such 'baskets of consumables'.

The difference between the values of these two textiles – a much greater difference from that to be found in the mid-fourteenth century, when woollens were less 'luxurious' – is too striking to require any further comment, except for those accompanying the following and companion table 7.<sup>58</sup>

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<sup>57</sup> See John Munro, 'Textiles as Articles of Consumption in Flemish Towns, 1330 - 1575', *Bijdragen tot de geschiedenis*, 81:1-3 (1998), 275-88. [Special issue on: 'Proeve 't al, 't is prysselyck': Verbruik in Europese steden (13de - 18de eeuw)/Consumption in the West European City (13<sup>th</sup> - 18<sup>th</sup> Century): Liber Amicorum Raymond Van Uytven]; and the previous and following notes..

<sup>58</sup> See Munro, 'Textiles as Articles of Consumption (n. 57)', pp. 275-88.

**Table 7: Dimensions and Composition of Selected Woollens and Says in the Sixteenth Century: England and the Southern Low Countries:** Essex (broadcloths), Ghent (broadcloths), Mechelen (broadcloths), Hondschoote (says), Bergues-St.-Winoc (says), Essex (says)

(1) Column 1 designates the titles, or data-indicators for the following rows, in terms:

- Dimensions on the loom: length in ells/yards and in metres; width in ells/yards and metres; weights in the local pound units and in kilograms.<sup>59</sup>
- Final dimensions of the cloth, after fulling and tentering (if any), with both length and width again given in ells/yards and metres.<sup>60</sup>
- The number of warp yarns in the loom (measured by the width), the number of warps per centimetre in the fulled or finished cloth; and the final area of the finished cloth, in square metres (m<sup>2</sup>).
- The final weight of the cloth in the local pound units and in kilograms; and finally the weight per square metre, in grams.

(2) Essex and Suffolk (in England's East Anglia region): Standard woollen broadcloths, popularly known as 'shortcloths' (24 yards long by 'seven-quarter' yds wide, to distinguish them from the

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<sup>59</sup> The table also provides the documentary sources of all the data. Notes to this table, *a* to *g*, indicate the metric conversion values of the various local pounds, ells, and yards. A Flemish ell was about 27 inches or about 0.7 metre; and the English cloth yard was often reckoned at 37 rather than 36 inches, evidently to take account of the selvages along the edges of the cloth. In this and the other tables, however, both the yard and the ell, for all materials, has been reckoned at the standard 36 inches, partly for reasons explained in the following note.

<sup>60</sup> In medieval and early-modern England, there was no difference between the ell and the yard, either for woollens or for linens. See Thorold Rogers, *History of Agriculture and Prices* (n. 2), vol. IV, p. 554: 'The commonest measure, and in the early part of the period the almost universal measure, is the ell. I stated, as I believe with good reason, that there did not appear to be any practical difference (Vol. I, p. 571) between the ell and the yard in early times, the later difference of nine inches not having been recognised. Nor does it appear that there was any substantial difference between the two quantities in the fifteenth, and hardly in the sixteenth century. Linen is generally sold by the ell, woollen cloth by the yard, and the exceptions are few. When they do occur for linen simultaneously they seem to be used indifferently.' On the equality of the yard and ell, and their use as synonyms for each other, in 13<sup>th</sup> century England, see John Munro, 'The 'Industrial Crisis' of the English Textile Towns, 1290 - 1330,' *Thirteenth-Century England*: VII, ed. Michael Prestwich, Richard Britnell, and Robin Frame (Woodbridge, 1999), pp. 103-41, nn. 22, 26, 35, 46. Indeed, the *Compositio ulnarum et perticarum* (in n. 35), written between 1266 and 1303, stipulated that all linear measures, including those for textiles, were to be based on the iron *ulna* of 36 inches; and the texts of this era use the two terms ell and yard interchangeably.

‘long cloths’ (30 yards), of which very few were produced in this era. Such woollens had become England’s primary and most lucrative export, displacing wool, by the early sixteenth century; and by that time had gained primacy, over most of England’s continental textile rivals, in European cloth markets.

- (3) Ghent: the *dickedinnen* broadcloth, with five seals, slightly smaller in its finished area, and of slightly lesser weight than the English broadcloths. This previously discussed cloth was the city’s most famous and its finest luxury broadcloth, one that still enjoyed a niche in the upper echelons of European markets.
- (4) Mechelen: its finest woollen, the *gulden aeren* (golden eagle), made from the world’s then finest wools, ‘Lemster Ore’ in Herefordshire (Welsh Marches), whose warp-yarn count and cloth weight were significantly greater than those of the Ghent *dickedinnen*. Mechelen’s luxury-woollen drapery had fared rather better than had the Ghent drapery, in the first half of the sixteenth century.
- (5) Hondschoote: the small double say (i.e. longer than the short say), probably woven, as suggested above, with a dry worsted ‘say’ warp and a greased, short-stapled woollen weft. As noted, the best representative of what had now become the southern Low Countries’ leading textile industry.
- (6) Bergues-Saint-Winoc: a rural neighbour of Hondschoote, producing true light worsteds, in both warp and weft yarns
- (7) Essex: one of East Anglia’s post-1560 ‘New Draperies’, producing a very light broad say, closely imitating those produced in Flanders. Its weight (grams per m<sup>2</sup>) was the lightest: only 18.0 percent of that of an Essex broadcloth.

### **Woollen and Worsted (Say) Textiles in the Economies of Later-Medieval and Renaissance England and the Low Countries:**

A full understanding of these data on textiles and textile prices depends upon some basic knowledge of the quite different natures of these two types of textiles, and of the technical processes involved in their manufacture. Unfortunately, the economic history literature has rarely defined the distinctions between and

among woollens, worsted, and the hybrid or mixed fabrics. Suffice it to say, at the outset, that virtually all wool-based textiles worn today are of the worsted type, while true woollens, with the following characteristics, are now to be found only in the form of robes adorning the cardinals in the Papal curia.

The essential differences between these two textiles, medieval and early-modern, lay in the quality and usage of their wools. The woollen broadcloths listed in these tables were all woven from very fine, short-stapled, curly-fibred wools, chiefly English wools from the Welsh Marches (Herefordshire and Shropshire), the Cotswolds (Worcestershire, Gloucestershire, Oxfordshire), and, as more distant third best, from Lincolnshire (Lindsay and Kesteven regions).<sup>61</sup> Before the mid- to late sixteenth century, when Spanish *merino* wools finally reached their level of true perfection, these English wools were unrivalled for their fineness, quality, and thus price.<sup>62</sup> So fine and delicate were these wools, necessarily greased with butter to prevent damage in the spinning and weaving processes, that cloths woven from their yarns could acquire cohesion, strength, and durability only through the arduous and complex processes of fulling and felting. The traditional method of foot-fulling, which best ensured the quality of the final product, required two or three men to trample upon the full-sized woven cloth, for about three days, in a stone vat containing water, soap, and ‘fullers earth’ (*floridin*: with hydrous aluminum silicates). That combination of heat, pressure, water, and chemicals forced the curly, scaly wool-fibres to intermesh or interlock, thereby

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<sup>61</sup> John Munro, ‘Wool-Price Schedules and the Qualities of English Wools in the Later Middle Ages, ca. 1270 - 1499,’ *Textile History*, 9 (1978): 118-69; John Munro, ‘The Medieval Scarlet and the Economics of Sartorial Splendour,’ in Negley B. Harte and Kenneth G. Ponting, eds., *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, Pasold Studies in Textile History No. 2 (London, 1983), pp. 13-70; both reprinted in Munro, *Textiles, Towns, and Trade* (n. 14).

<sup>62</sup> The gradual improvements in the qualities of the various Spanish merino wools were complex in nature, but essentially the product of advances in sheep management, cross-breeding, and adaptations to environmental factors, during the annual *transhumance* sheep migrations. The world’s best wools today, found chiefly in Australia, are those produced by sheep that are descendants of the Spanish *merinos*. See Carla Rahn Phillips, and William D. Phillips, *Spain’s Golden Fleece: Wool Production and the Wool Trade from the Middle Ages to the Nineteenth Century* (Baltimore and London, 1997); Robert Lopez, ‘The Origin of the Merino Sheep,’ *The Joshua Starr Memorial Volume: Studies in History and Philology* (a publication of *Jewish Social Studies* no. 5, New York, 1953), pp. 161-68; Peter J. Bowden, *The Wool Trade in Tudor and Stuart England* (London, 1962), pp. 1-76. See also the sources cited in 58 and 61.

condensing the cloth and shrinking its final area by fifty percent or more, and thus explaining its exceptionally heavy weight – heavier indeed than a modern overcoat, as indicated in Table 7.<sup>63</sup> As may be seen from this table 7, English woollen broadcloths were just as heavy as the more luxurious ones manufactured in the Low Countries.

In sharp contrast, the worsted cloths of this era were woven from much cheaper, much coarser, but also much stronger, tightly-twisted, long-stapled yarns. When woven, usually on a narrow rather than on a broadloom, such yarns, warp and weft, provided this worsted cloth with sufficient cohesion and strength, so that they did not require the fulling-felting processes that were requisite for true woollens. Consequently, even apart from differences in the wools themselves, they were a much lighter fabric, with as just a third or even less of the latter's weight (Table 7). As just suggested for Hondschoote, some says were a hybrid textile: with a long-stapled dry worsted warp and a shorter-stapled greased woollen weft; and these hybrids underwent at least some cursory fulling, if only to degrease the cloths. True worsted says – those of Bergues-Saint-Winoc, for example – were fully worsted in both warp and weft; and thus they were readily distinguishable from a woollen not only by their relative thinness and light weight, but also by their readily visible weave. In the true woollens of this era, the weave was completely obliterated by both the fulling and the subsequent processes of napping or teaseling, alternated with cropping or shearing, which gave the cloth a texture rivalling that of silk.

By the time of Erasmus's death (1536), the primary focus of the cloth manufacturing industries in

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<sup>63</sup> While this method of foot-fulling had long prevailed in the luxury-oriented draperies of the Low Countries, most English draperies had adopted mechanical fulling, with water-powered mills to power the pair of heavy, oaken fulling 'hammers' or stocks, a method that many rightly considered to be injurious to the quality of finer fabrics. See John Munro, 'Industrial Entrepreneurship in the Late-Medieval Low Countries: Urban Draperies, Fullers, and the Art of Survival,' in Paul Klep and Eddy Van Cauwenberghe, eds., *Entrepreneurship and the Transformation of the Economy (10th - 20th Centuries): Essays in Honour of Herman Van der Wee* (Leuven, 1994), pp. 377-88; Munro, 'Anglo-Flemish Competition (n. 24)', pp. 37-60; Raymond Van Uytven, 'De volmollen: motor van de omwenteling in de industriële mentaliteit', *Tijdschrift van de kring der alumni van de wetenschappelijke stichtingen*, 38 (1968), pp. 61 -76, republished as 'The Fulling Mill: Dynamic of the Revolution in Industrial Attitudes', *Acta Historiae Neerlandica*, 5 (1971), 1-14; and nn. 55, 57, 61.

the southern Low Countries had shifted from the heavy-weight luxury woollens, the predominant West European textile during the late-medieval era, to the much cheaper, coarser, and lighter worsted fabrics of the *sayetteries* and related *draperies légères*. Much earlier, however, from the early twelfth to early fourteenth centuries, similar *draperies légères* had also played a very significant role in the economies of north-western Europe (France, the Low Countries, England). In the thirteenth century, Hondschoote itself had been one of northern Europe's leading say-exporters to the Mediterranean; and collectively the *sayetteries* and other *draperies légères* had surpassed the northern woollen draperies in both the volume and values of aggregate production. Subsequently, however, from the very late thirteenth or early fourteenth centuries, most of these northern *draperies légères* disappeared, with the onset of sustained and ever more widespread warfare throughout the entire Mediterranean basin and western Europe, an era of chronic, ever more debilitating strife that lasted until the final end of the Hundred Years' War (1337-1453). That warfare, the economic nationalism that it bred, and the accompanying national fiscal, monetary, and commercial policies to conduct warfare led to frequent and often serious disruptions in international trade, with severe economic contractions (especially, of course, after the 1348 Black Death) and periodic depressions. For the cheap, northern textile industries, the most serious consequence of the warfare and all these related deleterious forces was the continuous rise in transport and transaction costs in international trade, which discouraged or even prohibited long distance trade in cheap products and thus favoured an international commerce in the far more luxury-oriented woollen draperies, whose higher-priced products were better able to sustain and 'bear the freight' of such rising costs. The marketing of such luxury fabrics was also favoured by the more highly skewed distribution of wealth and income in European markets that was also a consequence of these negative forces, and a feature of the late-medieval 'Great Depression' era.<sup>64</sup>

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<sup>64</sup> See John Munro, 'Industrial Transformations in the North-West European Textile Trades, c. 1290 - c. 1340: Economic Progress or Economic Crisis?' in Bruce M. S. Campbell, ed., *Before the Black Death: Studies in the 'Crisis' of the Early Fourteenth Century* (Manchester, 1991), pp. 110 - 48; reprinted in Munro, *Textiles, Towns, and Trade* (n. 26); John Munro, 'The Symbiosis of Towns and Textiles: Urban Institutions and the Changing Fortunes of Cloth Manufacturing in the Low Countries and England, 1270 -1570,' *The*



During these dark days for the northern textile producers, Hondschoote, despite also losing its Mediterranean markets, was one of the very few northern *sayetteries* to survive; and it became the undisputed leader of the Flemish *draperies légères* from the mid fifteenth century, when they began to revive, with the ensuing political stability, the Central European silver-mining boom, and then demographic revival, which together fostered a renewed expansion of the West European economy. Those more propitious economic forces, and the development of new, more secure overland continental trade routes between Italy and the Low Countries, a development that also flowed from the South German mining boom, led in particular to a sustained expansion in international and especially Mediterranean-oriented trade. That in turn propelled the dramatic growth of the Brabant Fairs, linked to Italy by these overland trans-Alpine trade routes, thus allowing Antwerp to become veritably the commercial and financial capital of Renaissance Europe.<sup>65</sup>

The extent to which those economic forces also boosted the fortunes of the Flemish *sayetteries* and other *draperies légères*, during the second half of the fifteenth century and first quarter of the sixteenth century, can be seen in Table 8, on the outputs of the Hondschoote sayetterie. The production of its says, as measured by the 8d excise tax, rose from 5,400 says in 1441-45 to 17,640 says in 1501-05; and then it shot up a further 2.45 fold to 43,176 says in 1536-40.<sup>66</sup> While such excise-tax indices are often a very imperfect

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*Journal of Early Modern History: Contacts, Comparisons, Contrasts*, 3:1 (Feb. 1999), 1-74; John Munro, 'The "New Institutional Economics" and the Changing Fortunes of Fairs in Medieval and Early Modern Europe: the Textile Trades, Warfare, and Transaction Costs', *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte*, 88:1 (2001), 1-47; Munro, 'Industrial Crisis of the English Textile Towns (n. 60)', pp. 103-41; Munro, 'Economic Depression and the Arts' (n. 14)', pp. 235-50; Munro, 'Symbiosis of Towns and Textiles (n. 64)', pp. 1-74; Hatcher, 'Great Slump of the Mid-Fifteenth Century (n. 23)', pp. 237-72; Nightingale, 'England and the European Depression (n. 23)', pp. 631-56; Robert Lopez and Harry Miskimin, 'The Economic Depression of the Renaissance', *Economic History Review*, 2nd ser., 14 (1962), 408-26; Robert Lopez, Harry Miskimin, and Carlo Cipolla, 'Economic Depression of the Renaissance: Rejoinder and Reply', *Economic History Review*, 2nd ser., 16 (1964), 519-29; Robert Lopez, 'Hard Times and Investment in Culture', in Wallace Ferguson, et al., eds., *The Renaissance* (New York, 1962), pp. 29-52.

<sup>65</sup> See n. 23 above and n. 68 below; Van der Wee, *Growth of the Antwerp Market* (n. 1), vol. II, pp. 113-244, 333-68; Munro, 'The "New Institutional Economics" and the Changing Fortunes of Fairs (n. 64)', pp. 1-30.

<sup>66</sup> See Coornaert, *Draperie-sayetterie d'Hondschoote* (n. 67), Appendix IV, pp. 485-90.

indicator, their validity here seems vindicated by actual data on cloth sales, beginning in 1526, which so closely parallels these output data, with mean sales of 42,761 says in 1536-40. As in the thirteenth century so in the early sixteenth century these *draperies légères* found their major markets in the Mediterranean basin, via those German and trans-Alpine overland routes, and, via Spain, in the Americas as well, to become quite decisively the leading textile industry of the southern Low Countries.<sup>67</sup> According to recent estimates of this region's industrial production in the 1550s, they were then producing about 3.64 million metres of these light worsted-type fabrics, while the various woollens draperies, in both traditional and newer forms, were collectively manufacturing only about 2.07 million metres of cloth.<sup>68</sup> As the accompanying Table 9

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<sup>67</sup> See John Munro, 'The Origins of the English 'New Draperies': The Resurrection of an Old Flemish Industry, 1270 - 1570,' in Negley B. Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 35-127; Munro, 'Symbiosis of Towns and Textiles (n. 64)', pp. 1-74; Munro, 'The Low Countries' Export Trade (n. 24)', pp. 1 - 30.

<sup>68</sup> Statistics from Hugo Soly and Alfons Thijs, 'Nijverheid in de Zuidelijke Nederlanden,' *Algemene geschiedenis der Nederlanden*, 6: (Haarlem, 1979), 27-57. See also: Emile Coornaert, *La draperie-sayetterie d'Hondschoote, XIVe-XVIIIe siècles* (Paris, 1930), 22-43, 236-53; Emile Coornaert, 'Draperies rurales, draperies urbaines: l'évolution de l'industrie flamande au moyen âge et au XVI siècle,' *Revue belge de philologie et d'histoire*, 28 (1950), 60-96; Émile Coornaert, *Une industrie urbaine du XIVe au XVIIe siècle: l'industrie de la laine à Bergues-Saint-Winoc* (Paris, 1930); E. Maugis, 'La sayetterie à Amiens, 1480-1587,' *Vierteljahrschrift für Sozial-und Wirtschaftsgeschichte* 5 (1907): 1-115; Maurice Van Haeck, *Histoire de la sayetterie à Lille*, 2 vols. (Lille, 1910); Robert S. DuPlessis and Martha C. Howell, 'Reconsidering the Early Modern Urban Economy: The Cases of Leiden and Lille,' *Past and Present*, no. 94 (February 1982): 49-84; Florence Edler, 'Le commerce d'exportation des sayes d'Hondschoote vers Italie d'après la correspondance d'une firme anversoise, entre 1538 et 1544,' *Revue du Nord* 22 (1936): 249-65; Donald C. Coleman, 'An Innovation and its Diffusion: The 'New Draperies',' *Economic History Review*, 2nd ser., 12 (1969), 417-29; Van der Wee, *Antwerp Market* (n. 1), vol. II, pp. 133-208 (especially 186-91); Robert DuPlessis, 'The Light Woollens of Tournai in the Sixteenth and Seventeenth Century,' and Alfons Thijs, 'Les textiles au marché anversois au XVIe siècle,' in Erik Aerts and John Munro, eds., *Textiles of the Low Countries in European Economic History* (Leuven, 1990), pp. 66-75, 76-86; Robert S. Duplessis, 'One Theory, Two Draperies, Three Provinces, and a Multitude of Fabrics: the New Drapery of French Flanders, Hainaut, and the Tournaisis, c.1500 - c.1800,' in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800* (Oxford, 1997), 129-72; Patrick Chorley, 'The 'Draperies Légères' of Lille, Arras, Tournai, Valenciennes: New Materials for New Markets?' in Marc Boone and Walter Prevenier, eds., *Drapery Production in the Late Medieval Low Countries: Markets and Strategies for Survival* (Leuven, 1993), pp. 151-65; Herman Van der Wee, 'Structural Changes and Specialization in the Industry of the Southern Netherlands, 1100-1600,' *Economic History Review*, 2nd ser. 28 (1975), 203-21; Herman Van der Wee, 'Industrial Dynamics and the Process of Urbanization and De-Urbanization in the Low Countries from the Late Middle Ages to the

indicates, in this same period (c.1560), these *says* and similar worsted or semi-worsted products accounted for 15.6 percent of total exports, by value, from the Brabant Fairs, or 21.6 percent of total textile exports, by value, as did the similarly-priced, light-weight linens, while the share for the heavier-weight woollens from other Netherlander draperies was only 8.75 percent, or 12.1 percent of textile exports. But the largest share of textile exports was claimed by the re-export of dyed and finished English woollens: 27.00 per cent of total textile exports and 19.50 percent of aggregate exports, by value (Table 9).

Indeed, the English cloth trade boom, which had begun in the 1460s (Table 8), and would endure until the early 1550s, and the previously mentioned South German silver-copper mining boom had together provided the first two legs of the tripod on which the commercial supremacy of Antwerp would rest for the virtual century, c.1460 - c. 1560. The great success of the English cloth industry was fundamentally based upon its ready access to tax-free wools that were still Europe's finest, while their continental rivals faced increasingly high English export taxes, other rising costs, and various commercial restrictions in obtaining these same fine wools. Furthermore, to worsen the plight of the Netherlands's traditional luxury woollen draperies, the English cloth trade came to be increasingly funnelled upon the Antwerp market, as the only available continental outlet that remained available to English merchants. From this very same decade of the 1460s, cloth merchants from England (English and Hanseatic German) met the South German merchants, with their growing flood of silver and copper, thus providing the South Germans with their chief return cargo, to be marketed throughout Germany and Central Europe, in the form of English woollens dyed and finished in Dutch and Brabantine drapery towns. This blossoming commerce, in attracting more and merchants from all over Europe, finally lured the Portuguese, who, in gaining temporary mastery of the Indian Ocean trades, established their European spice-staple at Antwerp (1501), and thus the final leg of its tripod; and they did so chiefly in order to gain access to South German silver, copper, fustians and other cheap textiles for their

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Eighteenth Century: A Synthesis,' in Herman Van der Wee, ed., *The Rise and Decline of Urban Industries in Italy and in the Low Countries: Late Middle Ages - Early Modern Times* (Leuven, 1988), pp. 307-81.

African and Asian commerce; and also to the South German banking houses recently established there (Fuggers, Höchstetters, Welsers, Imhofs, Herwarts, Tuchers).<sup>69</sup>

The overall significance of the various textile industries for the economy of the southern Low Countries can be seen by their ability to command almost three-quarters of this region's total export values, in the mid sixteenth century, as indicated in Table 9. We owe these data to the keen-eyed Italian merchant and writer, Luigi (Ludovico) Guicciardini, who published his observations in *Description de la cité d'Anvers*.<sup>70</sup> By the time that he did so, however, both the South German silver-copper mining boom, the English cloth trade and the Brabant Fairs had all passed their peak, though this table does seem to be representative of Antwerp's economy at its peak.

The companion Table 8 shows the dramatic growth in the exports of English woollens during this Age of Erasmus, in the first four decades of the sixteenth century. This growth of English broadcloth exports, to gain supremacy in the cloth markets of the Brabant Fairs and of western Europe generally, was obviously at the expense of England's still very heavily-taxed wool exports and thus again, in turn, also at

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<sup>69</sup> Jan A. Van Houtte, 'La genèse du grande marché international d'Anvers à la fin du moyen âge,' *Revue belge de philologie et d'histoire*, 19 (1940), 87-126; J. A. Van Houtte, 'Bruges et Anvers: marchés 'nationaux' ou 'internationaux' du XIVE au XVIe siècle?' *Revue du Nord*, 24 (1952), 89-108; J. A. Van Houtte, 'Anvers aux XVe et XVIe siècle,' *Annales: E.S.C.*, 16 (1961), 248-78; J. A. Van Houtte, 'The Rise and Decline of the Market of Bruges,' *Economic History Review*, 2nd ser., 19 (1966), 29-47; Oskar De Smedt, *De engelse natie te Antwerpen in de 16e eeuw*, 2 vols. (Antwerp, 1950); Van der Wee, *Antwerp Market* (n. 1), vol. II, pp. 34-120; John Munro, 'Bruges and the Abortive Staple in English Cloth: An Incident in the Shift of Commerce from Bruges to Antwerp in the Late Fifteenth Century,' *Revue belge de philologie et d'histoire/Belgisch tijdschrift voor filologie en geschiedenis*, 44 (1966), 1137-59; reprinted in Munro, *Textiles, Towns, and Trade* (n. 26); Munro, 'Anglo-Flemish Competition (n. 24)', pp. 37-70; Munro, 'Symbiosis of Towns and Textiles (n. 64)', pp. 1-74; Munro, 'Patterns of Trade (n. 12)', pp. 160-70.

<sup>70</sup> Ludovico Guicciardini, *Description de la cité d'Anvers, 1560*, trans. François de Belleforest, 1582; published in Antwerp, 1920). The table is based upon his data, as collated and presented by Wilfrid Brulez, 'Le commerce international des Pays-Bas au XVIe siècle: essai d'appréciation quantitative,' *Revue belge de philologie et d'histoire*, 46 (1968), 1205-21, reissued in English translation as: 'The Balance of Trade in the Netherlands in the Middle of the Sixteenth Century', *Acta Historiae Neerlandica*, 4 (1970), 20-48; and further modified by Jan De Vries and Ad Van der Woude, *The First Modern Economy: Success, Failure, and Perseverance of the Dutch Economy, 1500 - 1815* (Cambridge, 1996), Table 9.1, p. 360.

the expense of those Netherlander draperies that had so long remained dependent on the finer English wools: especially those of Ghent, Mechelen, and Leiden (in Holland). As Table 8 indicates, those English wool exports, whose volume in 1500 was only half that of 1400, fell again by another half during these four decades. Nevertheless, when converted into equivalent broadcloths (a ratio of 4.333 cloths per wool-sack), their early sixteenth-century volume still represented a considerable volume of potential cloth production.

The traditional Flemish woollen draperies, led by the triumvirate of Ghent, Bruges, and Ypres (the *drie steden*), had been the first to succumb to the growing English competition, with a flood of cloth imports that a Hanseatic observer (in 1487) had compared to an *inundacionis maris immensis*.<sup>71</sup> As Table 8 indicates, the indices of Ghent's cloth production, having fallen dramatically from the 1420s, fell even more sharply during the early sixteenth century. The industrial indices for Mechelen's drapery, especially the cloth outputs calculated from the *clergiegeld* tax, indicate a rather greater resilience and success in withstanding the growing English competition, in part thanks to its role as the judicial capital of the Habsburg Netherlands and to its location on the Germanic trade routes leading to the Rhineland. But the Mechelen drapery's Indian Summer of relative prosperity was fading by the 1530s, followed by a very precipitous decline (Table 8).<sup>72</sup>

As Table 8 also demonstrates, the early sixteenth-century cloth output of Mechelen's drapery was far smaller than that of its Dutch neighbour to the north in Leiden, which was then by far the Netherlands's most successful producer of traditional woollens, one still largely based on English wools. The Leiden drapery's prosperity had fundamentally rested upon the aggressive expansion of the Dutch merchant marine

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<sup>71</sup> For the quotation, see: Dietrich Schäfer, ed., *Hanserecesse, 1477-1530*, 3rd ser., 9 vols. (Leipzig, 1881-1913), vol. III, p. 105.

<sup>72</sup> Raymond Van Uytven, 'De Omvang van de Mechelse lakenproductie vanaf de 14e tot de 16e eeuw', *Noordgouw: Cultureel tijdschrift van de Provincie Antwerpen*, 5:3 (1965), 1-22; Raymond Van Uytven, 'La draperie brabançonne et malinoise du XIIe au XVIIe siècles: grandeur éphémère et décadence,' in Marco Spallanzani, ed., *Produzione, commercio e consumo dei panni di lana* (Florence, 1976), pp. 85-97; Wenceslaus Mertens, 'Changes in the Production and Export of Mechelen Cloth, 1330 - 1530', in Erik Aerts and John Munro, ed., *Textiles of the Low Countries in European Economic History* (Leuven, 1990), pp. 114-23; Wenceslaus Mertens, 'Toenemende economische welvaart', in Raymond Van Uytven, ed., *De geschiedenis van Mechelen: van heerlijkheid tot stadsgewest* (Lannoo, 1991), pp. 83-93.

in marketing its woollens, especially in the North Sea-Baltic region, and also on its ability to produce very good-quality woollens that were less expensive than those of its Flemish and Brabantine competitors.<sup>73</sup> But its output had peaked in 1516-20, with a mean production of 26,245 woollens; and with a continuing rise in English wool prices, the Leiden drapery then (1522) authorized a switch to the much cheaper – cheaper by 25 percent – but still inferior Spanish *merino* wools. This experiment ultimately failed, however; but when the Leiden drapery agreed to restore the former regulations stipulating the exclusive use of English wools, to safeguard its now shaky reputation for high quality, that *volte-face* proved to be too little and too late. As Table 8 demonstrates, Leiden's cloth production continued its precipitous decline, in the face of the now overwhelming English competition.<sup>74</sup>

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<sup>73</sup> See Marian Malowist, 'L'expansion économique des Hollandais dans le bassin de la Baltique aux XIVe et XVe siècles', *Studia z dziejow rzemiosla w okresie kryzysu feudalizmu w Europie Zachodniej w XIV i XV wieku* (Warsaw, 1954), republished in his *Croissance et regression en Europe, XIVe - XVIIe siècles* (Paris, 1972), 91-138; Dick E.H. De Boer, *Graafen Grafiek: sociale en economische ontwikkelingen in het middeleeuwse 'Noordholland' tussen 1345 en 1415* (Leiden, 1978), 211-32; T.S. Jansma, 'Philippe le Bon et la guerre hollando-wende, 1438-1441', *Revue du Nord* 42 (1960): 5-18; Hanno Brand, 'Urban Policy or Personal Government: The Involvement of the Urban Elite in the Economy of Leiden at the End of the Middle Ages', in Herman Diederiks, Paul Hohenberg, and Michael Wagenaar, eds., *Economic Policy in Europe Since the Late Middle Ages: The Visible Hand and the Fortune of Cities* (Leicester, 1992), pp. 17-34; De Vries and Van der Woude, *First Modern Economy* (n. 69), pp. 350-62; and especially Dieter Seifert, *Holland und die Hanse* (Cologne, 1997).

<sup>74</sup> See Nicholas Posthumus, ed., *Bronnen tot de geschiedenis van de leidsche textielnijverheid, 1333-1795*, 3 vols. (The Hague, 1910-1922), vol. II, no. 903, pp. 316-17; Nicolaas W. Posthumus, *Geschiedenis van de Leidsche lakenindustrie*, 3 vols. (The Hague, 1908-1939), vol. I: *De Middeleeuwen, veertiende tot zestiende eeuw* (1908), pp. 182-235, 368-408; Hanno Brand, 'Crisis, beleid en differentiatie in de laat-middeleeuwse Leidse lakkennijverheid', in J.K.S. Moes and B.M.A. De Vries, ed., *Stof uit het Leidse verleden: zeven eeuwen textielnijverheid* (Leiden, 1991), pp. 52-65, 201-05 (notes); Hanno Brand, 'A Medieval Industry in Decline: The Leiden Drapery in the First Half of the Sixteenth Century', in Marc Boone and Walter Prevenier, eds., *La draperie ancienne des Pays Bas: débouchés et stratégies de survie (14e - 16e siècles)/ Drapery Production in the late medieval Low Countries: Markets and Strategies for Survival (14th-16th Centuries)*, Studies in Urban Social, Economic and Political History of the Medieval and Modern Low Countries (Leuven-Appeldorn, 1993), pp. 121-49. On this question and the relative qualities of Spanish wools, see also Munro, 'Symbiosis of Towns and Textiles (n. 64)', pp. 1-74; and also the sources cited in n. 62 above. At this very same time, in 1535, the English writer Clement Armstrong contended that 'the wolles of Spayn are of such kynds [that] without the wolles of England be myxed with, it can no make no clothe of itself for no durable weryng, to be nother reisid nor dressid, by cause it hath no staple'. See R.H. Tawney and Eileen Power, eds., *Tudor Economic Documents*, 3 vols. (London, 1924), 3:102, section ii.2:

Meanwhile, in the southern Low Countries, the various *draperies légères* continued to flourish until the very eve of the Revolt of the Netherlands, against Spanish rule (1568-1609). As table 8 also indicates, Hondschoote's production peaked in the quinquennium 1566-70, with average annual sales of 93,057 says.<sup>75</sup> The devastation that was soon wrecked upon the southern Low Countries, with Spain's massive military retaliation and occupation, then civil and religious strife, and foreign interventions, brought about the very rapid decline of the *sayetteries* and other textile industries in the southern Low Countries. The consequences of this Revolt, especially the 'Spanish Fury' and sack of Antwerp in 1576, and conflicts with England quickly terminated the economic hegemony of the Brabant Fairs (Table 9).<sup>76</sup> Even before then, a flood of Flemish refugee artisans had been pouring northward into the sanctuary of Holland, and westward, across the Channel into England (East Anglia), where, in both places, they transplanted these *sayetteries* and other *draperies légères* as the 'New Draperies' (*nieuw draperie*, in Holland).<sup>77</sup> As the England's so-called Old Draperies,

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"A Treatise Concerning the Staple and the Commodities of this Realme". Indeed many of the leading so-called *nouvelles draperies*, such as Armentières, which produced cheaper imitations of the finest Flemish luxury woollens, resorting to cheaper raw materials, still used a mixture of two thirds Spanish and one third English wools. See Henri De Sagher, et al., eds. *Recueil de documents relatifs à l'histoire de l'industrie drapière en Flandre*, IIe partie: *le sud-ouest de la Flandre depuis l'époque bourguignonne*, 3 vols. (Brussels, 1951-66), vol. I, pp.102-17, no. 36 (Armentières drapery *keure*); Munro, 'New Draperies (n. 66)', pp. 36-48.

<sup>75</sup> See n. 67.

<sup>76</sup> Hondschoote's sales fell to a low of 12,128 says in 1586-90 (mean), and recovered to a mean of only 25,007 says in 1601-05, on the even of the Truce; but sales rose to a 17<sup>th</sup>-century peak of 54,761 says in 1626-30, before declining again, and then permanently in the face of competition from the English 'New Draperies'. See n. 74, and the next note; and also Van der Wee, *Antwerp Market* (n.1), vol. II, pp. 245-82.

<sup>77</sup> See Munro, 'New Draperies (n. 66)', pp. 35-127; K. J. Allison, 'The Norfolk Worsted Industry in the Sixteenth and Seventeenth Centuries, 2: The New Draperies,' *Yorkshire Bulletin of Economic and Social Research*, 13 (1961), 61-77; J.E. Pilgrim, 'The Rise of the 'New Draperies' in Essex,' *University of Birmingham Historical Journal*, 7 (1959-60), 36-59; Ursula Priestley, *The Fabric of Stuffs: The Norwich Textile Industry from 1565*, Centre of East Anglian Studies, University of East Anglia (Norwich, 1990); and also: Leo Noordegraaf, 'The New Draperies in the Northern Netherlands, 1500 - 1800,' B. A. Holderness, 'The Reception and Distribution of the New Draperies in England,' Luc Martin, 'The Rise of the New Draperies in Norwich, 1550 - 1622,' Ursula Priestley, 'Norwich Stuffs, 1600 - 1700:' all in Negley Harte, ed., *The New Draperies in the Low Countries and England, 1300 - 1800*, Pasold Studies in Textile History no. 10 (Oxford and New York, 1997), pp. 275-88, 173-196, 217-44, 245-74, respectively.

those producing the true heavy-weight woollens (Table 7), then suffered a severe and incessant decline from the early seventeenth century, the East-Anglian New Draperies superseded them as the primary manufacturing industry and exporter, ultimately spelling the doom of the *sayetteries* and other *draperies légères* in the Netherlands, as well.<sup>78</sup>

#### THE PURCHASING POWER OF COINS AND WAGES IN SOUTHERN ENGLAND, 1501 - 1540

##### **The Phelps Brown and Hopkins ‘Basket of Consumables’ and index numbers: , in quinquennial means (arithmetic and harmonic)**

This set of tables 10 and 11, for southern England, chiefly the Oxford-Cambridge region, necessarily commences with one that demonstrates the composition of the famous ‘Basket of Consumables’ that E. Henry Phelps Brown and his associate Sheila V. Hopkins constructed and published in *Economica* in 1956.<sup>79</sup> The price indices in their tables have, however, been amended. In analysing their original work sheets, now deposited in the Archives of the British Library of Political and Economic Science, I have corrected numerous compilation and calculation errors.<sup>80</sup>

In their original article, they produced a table showing the composition of four baskets, ‘around four dates’: 1275, 1500, 1725, and 1950. Obviously the 1500 basket has been utilised for this study. But while their table, and entire article, provide the impression that the composition was changed only in those years, a study of their working papers reveals that Phelps Brown introduced many subtle changes in composition of the baskets in far many more years, but fortunately none for the years 1501-1540.

For this entire period, therefore, their basket has the following weights for the following five major

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<sup>78</sup> See the sources cited in nn. 67, 77, and also: George D. Ramsay, *The Wiltshire Woollen Industry in the Sixteenth and Seventeenth Centuries* (London, 1943; 2nd edn., London, 1965); George D. Ramsay, *The English Woollen Industry, 1500 - 1750*, Studies in Economic and Social History (London, 1982).

<sup>79</sup> See n. 17 above.

<sup>80</sup> See n. 13 above. The box numbers of the Phelps Brown & Hopkins papers in the BLPES Archives (London School of Economics) are: Ia.324 (comprising most of the commodity price lists), J.III.2a, and J.IV.2a



sub-index groups, as indicated in Table 10.A:

- (1) farinaceous: 20.0 percent: with 1.25 bushels of wheat (45.461 litres), 1.00 bushel of rye (36.369 litres), 0.50 bushel of barley (18.184 litres), and 0.667 bushel of peas (24.243 litres).
- (2) meat and fish: 37.5 percent: with 1.5 sheep, 15 white herrings, and 25 red herrings):
- (3) drink: 22.5 percent: 4.5 bushels of barley malt (163.659 litres)
- (4) fuel and light: 7.5 percent: with 4.25 bushels of charcoal (154.567 litres), 2.75 lb. of tallow candles (1.247 kg), and 0.50 pint of oil (0.284 litre)
- (5) textiles: 2.5 percent: with 0.667 yd of canvas (0.6096 metre); 0.50 yd linen shirting (0.4572 metre); and 0.333 yd of cheap woollen cloth (0.3048 metre).

In more general terms, foodstuffs thus account for 80 percent of the basket, and industrial products for the remaining 20 percent. The other three baskets (those for 1275, 1725, 1950) contain yet a another group: butter and cheese, with an unvarying 10 lb. or 4.536 kg. in each basket, and a weight of 12.5 percent. The virtually complete absence of price data for both butter and cheese in this early sixteenth-century era has, unfortunately, meant the elimination of this category and thus the transfer of its basket weight to the meat-fish group, whose weight consequently rises from 25.0 percent to 37.5 percent.

Phelps Brown and Hopkins have justified these weights, especially for the two medieval baskets (1275 and 1500), by citing evidence from the expenditure account-books for the Savernak household, in Dorsetshire, during the years 1453-60: with 20 percent for grains, 35 percent for meat and fish, 23 percent for drink, though only 2 percent for butter and cheese, but still totalling 80 percent for foodstuffs. Textile expenditures are, however, not indicated in the Savernak household accounts.<sup>81</sup>

As noted earlier, the Phelps Brown & Hopkins basket served as the model for Van der Wee's Brabant 'basket of consumables' price index (Table 5). There are, however, some important differences between the

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<sup>81</sup> Phelps Brown & Hopkins, 'Seven Centuries of Prices (n. 17)', p. 180, Table I; K.L. Wood-Legh, *A Small Household of the Fifteenth Century* (Manchester, 1956).

two indices presented in Tables 5 and 10. Of lesser importance is the difference in the commodities in each basket. The Van der Wee basket contains only two farinaceous products: rye and barley (i.e. no wheat or peas), and no barley malt; but it does contain the butter and cheese missing from the Phelps Brown & Hopkins index. Of much greater importance is the method of data presentation. First, the Phelps Brown & Hopkins index provides only annual index numbers for each commodity, and not their actual money-of-account values, in pence sterling; and second, their index necessarily uses the fixed proportions or percentages noted above.<sup>82</sup>

The Van der Wee index, in striking contrast, presents the actual money-of-account prices (in Brabant pence *groot*) for each commodity, and thus the total value of the basket, for each year. As a consequence of this method, the percentage shares for each major sub-group in the basket change from year to year, with the changes in relative prices. Indeed, as noted above, the rise in the *relative* prices of grains from the original base period of 1451-75 to the base period for this study, 1501-05, meant that the proportional share for the farinaceous index rose from 35.32 percent to 38.31 percent, while the shares for the meat-dairy-fish and industrial-product indices fell from 38.87 to 36.94 percent and from 25.81 to 24.75, respectively. By the final quinquennium of 1536-40, the share for farinaceous products had again risen to 43.81 percent, that for meat-dairy-fish had also risen, though much less dramatically, to 38.97 percent, while the share for the industrial-product index had *necessarily* fallen to 17.22 percent by 1536-40.

In this respect, the Van der Wee method is obviously much superior to the one that Phelps Brown & Hopkins employed, with fixed its proportions, in that rising food prices would have forced all but the very rich to curb their expenditures on industrial goods. That relative shift in demand would have led to a *relative* fall in industrial prices (even though *nominal* prices, in current-money-of account, were rising, with general

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<sup>82</sup> Their worksheets, however, did provide an estimated value of the basket for 1500 at 104d sterling, which has been incorporated into this table. Using their original worksheets, I have provided annual prices for all the commodities in their basket, from 1264 up to 1830; and I am currently compiling the annual values of these baskets, in pence sterling and decimal-pounds sterling. From those values, I shall compute a new index, and publish the comparative results, as I hope, in a forthcoming journal article.

inflation).

Table 10.B provides the revised price-relatives or index numbers, based upon their mean values for 1451-75, for each of the years 1501 to 1505, and thus the mean of that quinquennium 1501-05, for the six commodity groups just listed, and for the total composite index, in columns 2- 7. In columns, 8 - 10, they have been re-grouped into the three major sub-indices of: farinaceous (with drink); meat-fish; and industrial products. In the following page of Table 10.B, column 11 (after the year column) again presents the PB & H Composite Price Index numbers for the years 1501-05, and their quinquennial mean; the next set of columns, 12 - 17, provide wage indices, for master building craftsmen (chiefly masons and carpenters) in southern England for these years:

- (12) the nominal daily wage in pence (6d),
- (13) the masters' nominal wage index (1451-75 =100),
- (14) the nominal daily wage for the craftsman's labourer (4d),
- (15) the labourers' nominal wage index,
- (16) the masters's real-wage index and finally
- (17) the labourers's real wage index.

These two sets of real-wage indices have been calculated by dividing, year by year, the nominal wage-index number by the commodity price-index number. The quinquennial means so calculated then serve as the new base 1501-05 = 100; and thus the mean composite price index for 1501-05, based on the values for 1451-75 =100, with a value of 106.79, becomes the new base 100.00 for 1501-05, as used in the subsequent commodity-price tables. In other words, in these subsequent tables, the composite price-index numbers, the composite of weighted prices for these five groups of commodities, represent the percentage, in each quinquennium, of the base value for 1501-05. Thus the index number of 142.64 for 1536-40 indicates that the general level of prices in those years was 42.64 percent higher than the mean price-level for 1501-05.

Each of the following ten tables, in the set labelled Tables 11.A - Table 11.J, for commodity prices

in southern England expressed in terms of metric units, has 10 columns, as follows; and the values, for each column, for the eight quinquennia of this study are presented in the rows:

- (1) The eight quinquennia of this study, from 1501-05 to 1536-40.
- (2) The commodity price per unit, in metric terms (litre, kilogram, or number) in pence (d) sterling.
- (3) The number of such commodity units that could have been purchased with the English silver penny.
- (4) The number of such units purchased with the gold angel-noble (5.157 g fine gold), valued at 6s 8d (80d) from 1464 to 1526, and at 7s 6d (90d) thereafter.
- (5) The number of such units purchased with the gold crown (3.438 g fine gold), after its introduction in August 1526, with the revised value of 5s 0d (60d) set on 5 November (elevated from the original 4s 6d, set in August 1526).
- (6) The nominal daily wage of a master building craftsman, which was consistently 6d per day for all quinquennia, except for the final one, when it had risen to 6.5d per day (1536-40), as noted earlier in this study.<sup>83</sup>
- (7) The number of these commodity units (litres, kilograms, etc.) that could have been purchased with that craftsman's daily wage.
- (8) The quantity index, with the base 1501-05 = 100, based upon the purchasing power of the sterling silver penny.
- (9) The commodity price index for that specific commodity, with the base 1501-05 = 100.
- (10) The Phelps Brown and Hopkins Composite Price Index, with the revised based 1501-05 = 100, as explained above.

### **Coinages used in the English tables: comparisons with those for the Low Countries**

In these tables, unlike those for the southern Low Countries, no foreign coins have been used to

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<sup>83</sup> Earlier, in the introduction to the more general study of wages and wage evidence in this period, justifications were provided for using the Phelps Brown & Hopkins wage data, in preference to those in Thorold Rogers. See pp. and nn. 3-9 above.

illustrate purchasing power, for the simple reason that no foreign coins had really enjoyed a true status of legal tender in insular England, before 1522. In May and November of that year, Henry VIII had grudgingly permitted the circulation of just a few foreign gold (and no silver) coins, but at specified exchange rates set below their intrinsic bullion values. Italian ducats and florins were rated as 4s 6d sterling; the French *écus au soleil à la couronne*, at 4s 4d; older French *écus*, 4s 0d; the Rhenish florin at 3s 3d; and the new Burgundian-Habsburg *carolus* florin (evidently), at 2s 1d sterling.<sup>84</sup> Subsequently, on 22 August 1526, with sharply rising market prices for gold in northwestern Europe, Henry VIII permitted very modest, and undoubtedly ineffective increases in the rates for Italian ducats and French *écus au soleil*: from 4s 6d to 4s 8d (to 56d: a 3.70 percent rise); and from 4s 4d to 4s 6d (to 54d: a 3.85 percent increase).<sup>85</sup> Shortly after, on 5 November 1526, as noted earlier, Henry VIII's government undertook a general debasement of both silver

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<sup>84</sup> See Hughes and Larkin, *Tudor Royal Proclamations* (n. 34), vol. I, no. 88, p. 136 (25 May 1522); no. 95, p. 141 (24 Nov. 1522); no. 102, p. 145 (6 July 1525); no. 103, p. 146 (8 July 1525); Feavearyear, *Pound Sterling* (n. 33), p. 48; Challis, *Tudor Coinage* (n. 32), pp. 68-69. See also *CWE* 2, pp. 311-12. These ordinances also stated that 'every piece of fine gold named a carolus keeping weight' should circulate at 6s 10 sterling. But this could not possibly be the recently issued Burgundian-Habsburg *carolus* florin, which contained only 1.700 g fine gold; but the ordinance might have meant the *réal d'or*, also first issued in August 1521, with 5.275 g fine gold. If the Italian ducats and florins, with 3.60 g fine gold were rated at 4s 6d (54d), then the proportional value for the *réal d'or* should have been  $(5.275/32.600*54)$  79d, which is still less than 6s 10d sterling. The proportional value of the new *carolus* florin should have been 25d or 25.5d sterling; and thus the 'pieces of base gold, also named florins', rated at 2s 1d probably did refer to these *carolus* florins.

<sup>85</sup> By this ordinance, Henry VIII also issued the first rose crown, with the initial value of 4s 6d sterling. Hughes and Larkin, *Tudor Royal Proclamations* (n. 34), vol. I, no. 111, pp. 156-58. The explanation and excuse for these coinage changes was a veritable rendition of Gresham's Law (that 'cheap money drives out dear', to places abroad where it commands a higher value): 'Forasmuch as now of late in outward parts beyond the sea, as well in Flanders and France, the price of money and gold, not only coined in those countries but also gold of the King our sovereign lord's coin of this realm, is so much enhanced in the valuation thereof that not only strange golds, as crowns and ducats, but also the gold of this realm, as nobles, half nobles, and royals [*Ryals*], by merchants as well strangers resorting hither as the King's subjects repairing into those parts, for the great gain and lucre that they find thereby daily, be transported and carried out of this realm to no little impoverishing thereof, and finally to the total exhausting and drawing out of all the coins out of the same, unless speedy remedy be provided in that behalf'. On this see, Raymond De Roover, *Gresham on Foreign Exchange* (Cambridge, Mass., 1949); George Selgin, 'Salvaging Gresham's Law: The Good, the Bad, and the Illegal', *Journal of Money, Credit, and Banking*, 28:4 (November 1996), 637-49.

and gold coinages, which effectively raised the values of English gold coins by a far more substantial 12.5 percent (e.g. the angel-noble, from 80d to 90d). But this same ordinance maintained the same unduly low rates that the ducats and *écus* had received in the August ordinance<sup>86</sup>. In view of the political nature of the 1522 monetary ordinances on foreign gold coins, adopted to secure Emperor Charles V's alliance against France, and in view of this serious undervaluation of foreign gold coins, one may doubt that many did circulate thereafter in England, and certainly not at these low rates.<sup>87</sup> In any event, including such coins in the following tables for England would provide no additional information on purchasing power, nothing more than already indicated in the tables for commodity prices in the southern Low Countries, where florins, ducats, *écus*, and English nobles certainly did circulate much more freely in this Age of Erasmus.

#### **The commodity-price tables for the purchasing power of coins and wages in England**

The set of ten commodity price tables (Table 11), for southern England, are the following, with brief notes on the nature or composition, origin, and units of measurement of the commodities so priced.<sup>88</sup>

**Table 11.A:**            **Bordeaux Red Wine:** wines, normally 'clarets', purchased by various ecclesiastical institutions and colleges at both Cambridge and Oxford, by the dozen gallons = 55.5503 litres; and thus 1 gallon = 4.54609 litres or cubic decimetres (dm<sup>3</sup>).

**Table 11.B:**            **Herrings:** North Sea smoked red herrings, possibly supplied by Flemish and Dutch fishermen, as well as by the English, purchased at Cambridge and Oxford by the

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<sup>86</sup> Hughes and Larkin, *Tudor Royal Proclamations* (n. 34), vol. I, no. 112, p. 158; Challis, *Tudor Coinage* (n. 32), p. 68, who thus incorrectly indicates that both foreign and English gold coins enjoyed proportional increases in their silver-exchange values.

<sup>87</sup> The next ordinance permitting and prescribing official rates for foreign gold coins was issued on 27 July 1538: the rate for ducats was raised to 5s 0d; for *écus au soleil*, to 4s 8d. Hughes and Larkin, *Tudor Royal Proclamations* (n. 34), vol. I, no. 180, p. 264.

<sup>88</sup> The sources of the data are given in each of the following tables.

cade, or kemp, which evidently contained 500 fish, as did the Flemish *stroo*.<sup>89</sup>

**Table 11.C:** **Cod Fish (mores):** cod caught from the waters off the Orkney and Shetland Islands, and Iceland, purchased at Cambridge by the ‘short hundred’, i.e. 100.

**Table 11.D:** **Wheat:** Also purchased from local producers in the Cambridge-Oxford region, by the quarter = 8 bushels = 64 gallons = 290.935 litres; and thus 1 bushel = 36.367 litres. Though not included with the comparable set of commodity-price tables in the earlier study, in *CWE 2*,<sup>90</sup> wheat prices were presented there in another table, on comparative purchasing power of wages in England and the Low Countries; but those prices were drawn from a much different region: the Exeter series that William Beveridge had published in 1929.<sup>91</sup> In retrospect, however, the commonly cited arguments for the superiority of the Beveridge data are less than compelling, all the more so when the Beveridge data contain far more lacunae than do Thorold Rogers’ price series. Finally, presenting Thorold Rogers’s price data, all drawn from the same, comparably selected Cambridge and Oxford accounts, seems more logical

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<sup>89</sup> See Thorold Rogers, *History of Agriculture and Prices* (n. 2), vol. I: *1259-1400*, pp. 608-09: ‘reckoned by the cade and the barrel; it would seem then that the cade contained between 500 and 600 fish;’ and in IV: *1400 - 1582*, pp. 526-37: ‘The cade of red herrings, however, and the barrel of white are the commonest quantities. I have assumed that the cade, the mase, and the kympfe or kemp of red herrings were indential in quantity, as they are nearly the same price at the localities where these terms are found. The barrel of white herrings is nearly double the price of the cade of red on an average.’ *The Shorter Oxford English Dictionary on Historical Principles*, I, p. 264: ‘**Cade:** 2. *spec.* A barrel of herrings, holding six great hundreds, i.e. 720; afterwards 500.’ In their working papers, Phelps Brown and Hopkins (see above n. ) stated: prices for ‘the red herrings in shillings and pence per cade, which is not defined’; but then: ‘The *Economist* table of measures (contemporary) gives the barrel [cade?] of herrings as 500’. They evidently ascribed 500 herrings as well to the cade. See also Van der Wee, *Antwerp Market* (n. 1), vol. I, Appendix 22, pp. 277-86.

<sup>90</sup> In *CWE 2*, Table E: ‘The Standard of Living of the English Mason 1500 to 1514’, p. 342.

<sup>91</sup> William Beveridge, ‘A Statistical Crime of the Seventeenth Century,’ *Journal of Economic and Business History* (1929): data republished in B.R. Mitchell and Phyllis Deane, eds., *Abstract of British Historical Statistics* (Cambridge, 1962), pp. 484-86.

than interjecting the Beveridge data, drawn from such far distant source, in Devonshire (Exeter).<sup>92</sup>

**Table 11.E:** **Peas:** fresh garden peas, purchased from local producers at Cambridge, by the quarter = 8 bushels = 64 gallons = 290.935 litres; and thus 1 bushel = 36.367 litres.

**Table 11.F:** **Sugar:** loaf or cane sugar, variously from the Mediterranean, Madeira, the Canaries, and the Azores, purchased at Cambridge and Oxford, by the dozen pounds avoirdupois = 5.4431 kilograms (453.493 grams = 1 lb.)

**Table 11.G:** **Tallow Candles:** English and French tallow candles, made from mutton fat, purchased at Cambridge and Oxford, by the dozen pounds avoirdupois = 5.4431 kilograms.

**Table 11.H:** **Paper:** Good quality linen paper (made from linen rags), probably imported from the Low Countries, averaging in size 12 inches by 8.5 inches (30.48 cm by 21.59 cm = 658.063 cm<sup>2</sup>).

**Table 11.I:** **Linens:** Table linen, medium to good quality, with a width of 1.0 to 1.5 ells or yards, priced by the dozen ells = 10.973 metres (1 ell/yard = 36 inches = 0.9144 metre).<sup>93</sup> Imported from the Low Countries, Normandy, and Ireland; but also purchased from suppliers in the West of England, Lancashire, and within the Oxford-Cambridge region. This is the one commodity whose price series lacked the desired

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<sup>92</sup> See Thorold Rogers, *History of Agriculture and Prices* (n. 2), vol. IV, pp. 280-92, Table I: Averages of Grain (wheat, barley, drage, oats, rye, beans, peas, vetches, pulse, malt, oatmeal). The wheat prices are drawn from 1363 localities over the period 1401-1582. There is no indication, in any of the volumes of this series, that the unit employed was the Winchester quarter that Beveridge used for his grain price data; see in particular I, chapter X, 'Weights and Measures', p. 166-68, on gallons, bushels, and quarters. The Winchester bushel contains 96.945 percent of the volume of the Imperial bushel. See William Beveridge, *Prices and Wages in England from the Twelfth to the Nineteenth Centuries*, vol. I: *Price Tables: Mercantile Era* (London, 1939; republished London, 1965), p. lix.

<sup>93</sup> See n. 60 above.



consistency, because of the varying provenance and price variations, with possible variations as well in the cloth width. Nevertheless, the mean prices are surprisingly stable over this long era, varying from a low 7.364d per metre in 1506-10 to a high of 9.446d per metre in 1531-35.

**Table 11.J:** **Woollen Cloth:** First-quality English broadcloths, priced by the *pannus* of statutory dimensions: 24 yards/ells (21.945 metres) by 1.75 yards (1.600 metres), purchased by New College, Oxford, and King's College, Cambridge. Though Thorold Rogers provided price data for second and third quality woollens, only those for the best quality have been used in this table.<sup>94</sup> Because these woollens were so much cheaper than the Flemish, the format for the preceding tables on English prices, for the purchasing power of wages, was selected: i.e. by calculating the number of metres of such woollens that a master mason could purchase with both his daily and weekly wage (i.e. for six days). Also included in the table is the alternative estimate of the number of days's wage income that such a mason would have had to spend in purchasing one of these woollens, each year. These tabulated data indicate that, while these English woollens were indeed substantially cheaper than the Flemish and Brabantine woollens, they were still luxury items that few craftsmen could or would have afforded to purchase in this era – not when they would have cost a master mason or carpenter from 130 to 193 days's wage. As in the Low Countries of this era, worsteds (says) and linen fabrics were the more obvious choice for even the best paid master craftsman.

**AN OVERVIEW OF PRICE CHANGES AND THE PURCHASING POWERS OF COINAGE IN THE LOW COUNTRIES AND ENGLAND DURING THE AGE OF ERASMUS AND THE EARLY PRICE REVOLUTION ERA**

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<sup>94</sup> See Thorold Rogers, *History of Agriculture and Prices* (n. 2), vol. IV, pp. 563-65. See n. 60, above, on ells and yards.

A detailed analysis of all of these commodity-price tables for the southern Low Countries and southern England is hardly necessary, for they should be self-explanatory. One can readily see that in both countries, virtually all commodities were affected by the inflationary forces of Price Revolution, even as early as the quinquennium 1516-20. As the commodity-price tables for the southern Low Countries (Tables 6.A - K) indicate, the average price-level, as measured by the Van der Wee 'basket of consumables' index (Table 5), had risen by virtually 48 percent from the initial quinquennium 1501-06 to the final one, for 1536-40; and as the similar tables for England indicate (Tables 10-11), the Phelps Brown 'basket of consumables' index had risen by almost as much, by 43 percent, over this same forty-year period (and indeed, somewhat earlier, in 1526-30, by 47 percent, before declining ever so slightly, and then sharply rising once more). As the synoptic tables for these two regional price indices indicate, over the forty-year period, the sub-index for grain prices rose the most (at least in Brabant), followed by the index for meat-dairy-fish products, with the smallest rise, though still a substantial rise, in the Industrial Products index.

These differences in the behaviour of the price indices are fully to be expected, and are quite typical of the behaviour of prices during expansionary eras in early-modern and modern European economic history. Such a behaviour of individual prices in no way contradicts the previously expressed view that the Price Revolution was fundamentally monetary in its origins and nature. Indeed totally fallacious are the commonly expressed views that, if the causes of inflation were essentially monetary, then all prices should have moved together, in tandem, and also necessarily in proportion to the increased stock of money.<sup>95</sup> Obviously, during any inflation, the continual fluctuations of a myriad of *real* forces in the economy, and the individual reactions of producers and consumers, continued to play their usual role, along with monetary expansion, in effecting numerous changes in *relative* individual prices and wages within the economy.

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<sup>95</sup> Anna Jacobson Schwartz, in a review of Spooner's *International Economy and Monetary Movements in France*, in *The Journal of European Economic History*, 3: 1 (Spring 1974), 253, comments that: 'the author subscribes to a familiar fallacy, namely that a monetary explanation to be valid requires that all prices move in unison'.

As noted earlier, the ability or capacity of an economy to respond to large increases in aggregate demand largely determined the degree of inflation that would ensue, with a continuous monetary expansion, in coinage stocks and/or flows. Thus, the more that the various economic sectors enjoyed access to underutilised resources (in land, capital, and labour), allowing them to be fairly flexible or *elastic* in their individual responses to large increases in effective demand, the less would be the overall extent of inflation. Obviously, at any given time, some sectors were more flexible or had more *elastic* supply schedules than others. Historically, the arable agricultural sector tended to have the least elastic supply schedules, all the more so as population growth and economic development led to a greater and greater utilization of existing resources, and to what economists would call ‘full employment’. Indeed, in the short run, once village farming communities or estate owners had used up their available supplies of arable land, and decided upon the division of resources between arable and pastoral agriculture, and established the crop rotations to be pursued, their ability to respond quickly to changes in demand were rather limited. Once the wheat had been planted, its supply could not be increased; but bad weather, insects, or other adverse forces could reduce the amounts harvested. In the longer run, during periods of economic growth, agricultural producers outputs were usually able to increase their outputs only by resorting to less fertile, less productive and thus more costly ‘marginal’ lands.

In many areas of the manufacturing sector (apart from the extraction of natural resources), producers enjoyed a much more elastic supply of inputs, especially labour – usually the key resource, all the more so during periods of population growth. In response to changes in demand, producers could readily hire or dismiss workers (few of whom ever had guaranteed full time employment), increase or decrease their orders for raw materials (flax, wool, leather, metals, wood, etc.), usually without incurring much higher costs. For such reasons, therefore we would expect that, during inflationary periods, costs and prices tended to rise less in the labour-intensive manufacturing sector than in the agricultural sector (and there, less in livestock husbandry than in arable farming).

Of course, these relationships did not remain fixed in this fashion over time. The exploitation of newly acquired land resources, changes in capital formation, and technological or institutional changes, etc. continually altered ‘production functions’ in the various sectors and industries; and thus production costs and the relative prices of the products so produced also would change. Yet the extent and impact of such changes were, in historical perspective, relatively small and limited in scope before the modern Industrial Revolution, from the mid eighteenth century.

Varying demand factors also played their role in explaining differences in the annual and longer-term behaviour of commodity prices. First the impact of increased stocks and/or flows of money could not be general throughout the entire economy and society. Their impact would have depended upon how those who received the additional money incomes chose to spend them (i.e. the portions not saved) on various commodities, domestic and imported. Thus differences in consumer demand and their choices within the economy would also be reflected in differential price changes.<sup>96</sup>

Second, if man lives not by bread alone, most people then did require a basic supply of bread grains, as their first necessity. As grain prices rose, without any substantial diminution in consumption, those with relatively fixed incomes – most people – were forced to reduce their expenditures on other commodities, and thus the demand for them, reducing the pressure to increase their prices. But conversely, as prices for grains and similar commodities rose much more swiftly than others, in response to differing supply and demand conditions, most consumers would have responded by switching to acceptable substitutes whose prices were rising more slowly, especially if they were ranked on a lower scale in the consumer hierarchy of demand. Such substitutions would then have contributed to a rise in these commodity prices, while reducing the rate

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<sup>96</sup> In sum, differential price changes for individual commodities during such inflationary periods reflect three basic conditions of micro-economics: (1) differences in the elasticities of supply, reflecting the differing abilities of producers to respond to changes in market demand by increasing output without incurring rising marginal costs; (2) differences in the price-elasticities of demand – reflecting these consumer substitutions; (3) income elasticities of demand – reflecting income-based consumer choices: i.e. those that differ because of differences in purchasing power and the relative differences in priorities that consumers assign to various goods, faced with a limited budget.

of price increases for the ‘first choice’ commodities.

These continual, fluctuating substitutions in consumer choice reveal, of course, one of the most serious faults in these consumer price-indices, a weighted average of prices: that the individual components in these ‘baskets’ must remain fixed, without accounting for substitutions, at least in the shorter run, and certainly for the period of this study during the Age of Erasmus. For this reason such price-indices tend to overstate the consequences of inflation for the typical consumer.

All of these tables, therefore, provide a comparison of the price increases for each individual commodity, over these four decades (1501-1540), with the rise in the overall CPI for these two regions. In the southern Low Countries, principally the Antwerp region, the Van der Wee ‘basket of consumables’ index rose by 47.98 percent (Tables 6.A - J and Table 12). Of the individual commodity prices in these tables, those that rose the most, and thus more than the overall rise in the CPI, were: salted beef (64.49 percent), herrings (54.65 percent), wheat (68.30 percent), and – heading the list – loaf sugar (100.94 percent). The three main sub-indices rose in a quite predictable fashion: grains (farinaceous) by 69.2 percent; meat-dairy-fish products, by 56.1 percent; and industrial goods, by just 3.0 percent (though it had risen by 29.6 per cent, in 1526-30, only to fall sharply over the next decade).

In southern England, over this same forty-year period, the Phelps Brown & Hopkins ‘Basket of Consumables’ Index rose slightly less than did the Van der Wee Index for Brabant: by 42.64 percent (Tables 11.A-J, and Table 14 ). The two English price-leaders, rising more than the overall CPI, were: peas (though just barely) and – again by a very wide margin -- sugar, rising by 162.1 percent. Very surprisingly, and quite contrary to all expectations, not only did the price of wheat rise less than the did the CPI in this 40-year period (by only 10.07 percent), but so did the sub-index for farinaceous products (wheat, rye, barley, peas: with a weight of 20.0 in the index): a rise of just 25.47 percent. Had demographic forces been the primary motor of the English inflation, we would have expected the contrary. The sub-index for meat and fish, however, did rise much more than did the CPI: by 68.20 percent; conversely, and not surprisingly, the

industrial-goods index rose by substantially less than did the CPI: by only 22.21 percent, though by considerably more than did the similar index for Brabant over this four decade period.

#### **BUILDING CRAFTSMEN AND THE PURCHASING POWER OF WAGES IN THE EARLY SIXTEENTH-CENTURY LOW COUNTRIES AND ENGLAND**

The final set of tables 12 - 17 provides some better answers to this study's initial questions about real incomes and living standards in this Age of Erasmus, as expressed by the purchasing power of a craftsman's daily wages, in the southern Low Countries and England; and thus also information about Erasmus's own standard of living (in the final table 17).

#### **Labour and work in the Habsburg Netherlands (Low Countries), 1501 - 1540**

In Table 12 (Price and Wage Indices for Southern Brabant, 1501-05 to 1536-40), the real wages for master masons and carpenters in the Antwerp-Lier-Brussels region – i.e. the purchasing power of their nominal money wages – have been calculated from the data provided in the following columns, most of which demonstrate the construction of the 'Basket of Consumables' Consumer Price Index (see again Table 5):

- (1) the years of the standard eight quinquennia, 1501-05 to 1536-40
- (2) the quinquennial mean prices, in d. *groot* Brabant, for the sub-index for Grains (rye and barley);
- (3) the CPI index numbers for Grains, in each quinquennium, with the base 1501-05 = 100 (= 111.76d *groot*);
- (4) the quinquennial means prices, in d. *groot* Brabant, for the sub-index for Meat, Fish, and Dairy products (beef, herrings, cheese, butter);
- (5) the CPI index numbers for the sub-index for Meat, Fish, and Dairy products, in each quinquennium, with the base 1501-05 = 100 (= 107.74d *groot*);
- (6) the quinquennial mean prices, in d. *groot* Brabant, for the sub-index for Industrial Products (charcoal, tallow candles, woollen cloth, linen cloth);
- (7) the CPI index for the sub-index for Industrial Products, in each quinquennium, with the base 1501-05 = 100 (= 72.20d *groot*);

- (8) the quinquennial mean value, in d *groot* Brabant, of the Van der Wee composite ‘basket of consumables’;
- (9) the equivalent current values of the baskets in the preceding column, expressed now in d. *groot* Flemish;
- (10) the Van der Wee Price Index (basket of consumables) with the original base 1451-75 = 100 (= 232.524d *groot* Brabant for 155.016 d *groot* Flemish, for the entire basket).
- (11) the Van der Wee Price Index (basket of consumables) with the new base 1501-05 = 100 (= 291.700d *groot* Brabant or 194.467d *groot* Flemish);
- (12) The Nominal Wage Index for master building craftsmen in Antwerp, with the base 1501-05 = 100 (= 12.250d *groot* Brabant or 8.167d *groot* Flemish). The craftsmen’s wages are the annual means of the money wages, in d *groot* Flemish, paid to master masons and master carpenters; and thus the annual means of those two sets of money wages.
- (13) The Real Wage Index for these two sets of building craftsmen, with the same base 1501-05 = 100: calculated as the quotient of the Nominal Wage Index divided by the Consumer Price Index, and adjusted by the calculations explained in note 97.<sup>97</sup>

For each set of quinquennial index numbers in this table, the values for the subsequent quinquennia are expressed, in effect, as a percentage of the values calculated for the initial base period 1501-05.

These price and wage indices are repeated in the following Table 13, on ‘The Purchasing Power of Daily Money Wages in Brabant,’ which provides much more and more complex data on wages of building craftsmen (masons and carpenters) in Antwerp, in terms of the following columns:

- (1) The quinquennial means, from 1501-05 to 1536-1540;

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<sup>97</sup> For each individual year, the true RWI is calculated in this fashion: NWI/CPI. But, for mathematical reasons too complicated to discuss here, the calculation of the mean values for the RWI for this base-period quinquennium does not produce a value equal 100.00, as one might expect, but a slightly different value: 100.219. If we also calculate the mean value of the indices for the number of Van der Wee commodity baskets that could be purchased with the annual wage income (discussed below), we arrive at this very same value: 100.219. The RWI index numbers for each year, so calculated (NWI/CPI), are then multiplied by this value (100.218675) to produce a new set of index numbers, whose mean now provides the true based for the actual quinquennial real wage indices in this table: i.e. so that the mean of 1501-05 = 100.

- (2) The quinquennial mean values of an Antwerp master mason's daily summer wage, in d *groot* Flemish;
- (3) The quinquennial mean values of that same wage in d *groot* Brabant (i.e. 1.5 times as much);
- (4) The quinquennial mean values of the master carpenter's daily summer wage in d *groot* Brabant;
- (5) The quinquennial mean values of these two sets of masters's wages (masons and carpenters) in d *groot* Brabant;
- (6) The quinquennial mean values of their winter wages in d *groot* Brabant;
- (7) The quinquennial mean values of the winter wage as percentages of the summer wage;
- (8) The quinquennial mean values of summer wages of a mason's labourer, in d *groot* Brabant;
- (9) The quinquennial mean values of that wage as a percentage of a master mason's daily summer wage;
- (10) The quinquennial mean number of days that such craftsmen worked in the Antwerp-Lier region of Brabant..

### **Seasonal Wages and the Working Day in the Renaissance Low Countries**

This seasonal summer-winter difference in time-wages, if not in piece-work wages, was commonplace in continental western Europe, up to the eighteenth century. Time-wages were normally paid by the day (sometimes by the week of six-working days). In the pre-Industrial Revolution era, the only effective limitation on the number of hours to be worked each day was the number of hours of sunlight, reduced by the time necessarily taken for meals and some rest. Indeed, most men worked literally 'from sun to sun'. That meant that in the Spring-Summer-early Fall months, the normal working day was at least twelve hours; and in the late Fall and winter months, about eight hours to nine hours. Consequently, the winter wage – despite the much higher cost of living (food, fuel, clothing) – was usually only about 67 to 75 percent of the summer wage, as is clearly evident in this table. Thus such seasonality in wages indicates that the wage was implicitly hourly rather than daily.<sup>98</sup>

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<sup>98</sup> See John Munro, 'Urban Wage Structures in Late-Medieval England and the Low Countries: Work-Time and Seasonal Wages,' in Ian Blanchard, ed., *Labour and Leisure in Historical Perspective, Thirteenth to Twentieth Centuries*, Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte Beiheft series,



### Alternative Means of Estimating the Purchasing Power of Wages in Brabant in Table 13:

The remaining columns in this table on wages of Antwerp craftsmen provides some alternative means of estimating the purchasing power of those wages, for each quinquennium, in terms of the following columns 11 to 18:

(11- 12) The quinquennial mean values of the Van der Wee 'basket of consumables' in d *groot* Brabant (11) and in d *groot* Flemish (12).

(13) The quinquennial mean values of the Van der Wee price index (CPI), with the base mean 1501–05 = 100 (= 194.467 d. *groot* Flemish; but obviously identical for both sets of prices in Flemish and Brabant moneys-of-account, tied together by the 1.5:1 ratio).

(14) The quinquennial mean index numbers of the Nominal Wage Index (same base), based on the mean daily summer wages for masons and carpenters (1501-05 = 100 = 12.250d *groot* Brabant or 8.167d *groot* Flemish).

(15) The quinquennial mean index numbers of their real-wage index computed by the adjusted formula NWI/CPI, adjusted in the manner explained earlier, in note 97.<sup>99</sup>

(16) An alternative measure of real wages: the quinquennial mean number of these Van der Wee 'commodity baskets', computed by the *harmonic* mean, that a master mason or carpenter might have purchased with his annual money-wage income, if employed for 210 days a year at the summer wage. A second real-wage index constructed in a similar fashion, demonstrates that this method produces the same

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no. 116 (Stuttgart: Franz Steiner Verlag, 1994), pp. 65-78; Jan De Vries, 'An Inquiry into the Behaviour of Wages in the Dutch Republic and the Southern Netherlands, 1580-1800,' *Acta Historica Neerlandicae*, 10 (1978), 79-97; reprinted in Maurice Aymard, ed., *Dutch Capitalism and World Capitalism* (1982), pp. 37-62; Jan De Vries, 'An Employer's Guide to Wages and Working Conditions in the Netherlands, 1450-1850,' in Carol S. Leonard and Boris N. Mironov, eds., *Hours of Work and Means of Payment: The Evolution of Conventions in Pre-Industrial Europe*, Proceedings of the Eleventh International Economic History Congress, Milan, September 1994, Session B3b (Milan, 1994), pp. 47-63.

<sup>99</sup> See above n. 97.

results as does the first real-wage index.<sup>100</sup> Although 210 days of employment was the mean number computed for the century 1450 - 1550, the average number of days of employment in 1501-40 was slightly more: 217.5 days.

(17) The quinquennial mean index numbers for the number of such commodity baskets so acquired, with the based 1501-05 = 100 (i.e. 8.819 baskets for 1501-05).

(18) The quinquennial mean number of baskets so acquired with the mean number of days of employment for this period: 21.7.15 days.

(19) The quinquennial mean number of these Van der Wee 'commodity baskets', calculated, as a modified assessment of this real income, by combining an estimate of the value of the summer and of the winter wages. In these calculations, 70 percent of the time employed was allocated to the summer wage and thus 30 percent to the winter wage.

(20) The quinquennial mean index numbers for the number of these Van der Wee 'commodity baskets' so acquired (summer and winter wages earned), with the base 1501-05 = 100 (=8.212 commodity baskets).

( 21 - 23) For purposes of comparison, the quinquennial means of index numbers for the Van der Wee 'Basket of Consumables' CPI, and of the NWI and RWI, for these Antwerp craftsmen are provided for the original base period, 1451-75=100, which is also the traditional base-period for medieval and early-modern price history, as mandated by the International Price History Commission.

If we take as our true base, the initial quinquennium 1501-05, we perceive that the real wage-incomes of Antwerp building craftsmen had barely deteriorated over this forty-year period, by 1.5 to 3.5 percent (according to the index used), though with a temporary dip in real incomes during the early 1520s. On the

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<sup>100</sup> The same method also had to be employed: the numerical value of the harmonic mean of the number of such commodity baskets for 1501-05, 8.819 baskets, was used to compute the first set of index numbers for this quinquennium (i.e. each year's number of baskets divided by 8.819); and the mean of this sum of index numbers was taken, providing the same result of 100.219 (see n. 93). That result was used to compute the second set, to produce the mean 1501-05 = 100.00, and quinquennial index numbers identical to those produced in computing the first Real Wage Index.

other hand, if the traditional base of 1451-75=100 is used, a quarter-century period that coincidentally marks the so-called Golden Age of the artisan and labourer in north-west Europe, a major deterioration in real incomes, about 19.5 percent, had evidently already taken place before the dawn of the sixteenth century. By 1540, the real-wage index of these Antwerp craftsmen was only about 77 percent of the level achieved in 1451-75. One should also remember, however, that this so-called Golden Age in the third quarter of the fifteenth century was one of continued plague and depopulation, sporadic warfare (civil and foreign), and economic depression, quite unlike the far more buoyant and propitious economic circumstances of the expansionary Age of Erasmus.<sup>101</sup>

### **Labour and work in England, 1501 - 1540**

For England, the comparable and relevant price and wage data for 1501-1540 can be found in the following Tables 14 and 15. The English CPI, the aforementioned Phelps Brown and Hopkins 'basket of consumables' index, is presented in Table 14, with its five sub-indices and the then Composite Price Index. Their original index numbers, with the base 1451-75 = 100, have been converted to accord with the new base, 1501-05 = 100 (see Tables 10.A and 10.B). The data in the following columns are:

- (1) the eight quinquennia, from 1501-05 to 1536-50;
- (2) The quinquennial mean index numbers for the Farinaceous sub-index (wheat, rye, barley, peas), with a weight of 20.0 percent;
- (3) The quinquennial mean index numbers for the Meat and Fish sub-index (sheep, white and red herrings), with a weight of 37.5 percent, because, in the complete absence of prices for butter and cheese, there is no Dairy Product sub-index for this period.
- (4) The quinquennial mean index numbers for the Drink sub-index (barley malt), with a weight of 22.5

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<sup>101</sup> See Munro, 'Economic Depression and the Arts (n. 14)', pp. 235-50; Munro, 'Symbiosis of Towns and Textiles (n. 64)', pp. 1-74; Hatcher, 'Great Slump of the Mid-Fifteenth Century (n. 23)', pp. 237-72; Nightingale, 'England and the European Depression (n. 23)', pp. 631-56; Van der Wee, *Antwerp Market* (n. 1), vol. II, 61-142.

percent;

- (5) The quinquennial mean index numbers for the Fuel and Light sub-index (charcoal, candles, oil), with a weight of 7.5 percent;
- (6) The quinquennial mean index numbers for the Textiles sub-index (canvas, linen shirting, cheap woollen cloths), with a weight of 12.5 per cent;
- (7) The quinquennial mean index numbers for the Phelps Brown and Hopkins' Composite Price Index, as the weighted sum of these sub-indices (i.e. = 100);
- (8) The quinquennial mean index numbers for the combined Farinaceous and Drink index (weight: 42.5 percent);
- (9) The quinquennial mean index numbers for the combined Meat-Fish-Dairy index (weight: 37.5 per cent);
- (10) The quinquennial mean index numbers for the combined Industrial index (weight: 20.0 percent);
- (11) The quinquennial mean index numbers for the Composite PB & H 'basket of consumables' index, for the base period 1501-05 = 100;
- (12) The quinquennial mean index numbers for the Composite PB & H 'basket of consumables' index, for the original base period 1451-75 = 100.

The following Table 15 continues with the calculations of the real-wages – again the purchasing power of nominal money wages – for master building craftsmen (masons and carpenters) in southern England, principally the Oxford-Cambridge region, with the following columns:

- (1) The years of the quinquennia, 1501-05 to 1536-50
- (2) The quinquennial mean nominal daily wage for master building craftsmen (masons and carpenters), in pence sterling, for each quinquennium (6d for all but the least quinquennium);
- (3) The quinquennial mean nominal wage index, with the base 1451-75 = 100 (= 6d. daily);
- (4) The quinquennial mean index numbers for the Phelps Brown & Hopkins composite price index, with the same base 1451-75 = 100;

- (5) The quinquennial mean index numbers for the real wage index for these master building craftsmen, with that same 1451-75 base, calculated as the quotient of NWI/CPI;
- (6) The quinquennial mean index numbers for the nominal wage index with the new base, 1501-05 = 100 (but also equal to 6d. daily);
- (7) The quinquennial mean index numbers for the Phelps Brown & Hopkins composite price index with that new base, 1501-05 = 100;
- (8) The quinquennial mean index numbers for the real wage index for these building craftsmen with the same base, but unadjusted;
- (9) The quinquennial mean index numbers for the real wage index, adjusted in the manner described earlier in note 97.<sup>102</sup>

As this table readily indicates, the real-income trends for southern England's master building craftsmen (masons and carpenters) are rather different from those just examined in the Antwerp-Lier region in Brabant. In the first place, we find no evident seasonal wages in our data. Although the payment of lower winter wages had indeed been commonplace before the Black Death, it was rarely observed thereafter, at least in the extant records; and if and when a reduced winter wage was imposed, it was usually about 5/6 (83.33 percent) of the summer wage. The payment of a higher winter-wage was, perhaps, one way that post-Plague employers could circumvent the overly severe limitations (on summer wages) imposed by the Ordinance and Statute of Labourers (1349-1351), the crown's injudicious response to labour scarcities.<sup>103</sup> Nevertheless, as in the Low Countries, a twelve- or more hour working day for most of the year remained

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<sup>102</sup> See n. 97 above.

<sup>103</sup> The Ordinance of Labourers, decreed on 14 June 1349, is restated and reissued in T.E. Tomlins, J. Raithby, eds., *The Statutes of the Realm*, 6 vols., Record Commission (London, 1810-22), vol. I, pp. 307-08; for the Statute of Labourers, 25 Edwardi III stat 2. c. 3 *Ibid.*, vol. I, 311-12. Yet seasonal wages evidently did continue in England, and well into modern times. Cf. Smith, *Wealth of Nations* (n. 9), p. 74: 'First, in almost every part of Great Britain there is a distinction, even in the lowest species of labour, between summer and winter wages. Summer wages are always highest.'

standard in England, until, finally, in 1847, Parliament, by Fielden's Act, mandated a maximum ten-hour day for all factory workers.<sup>104</sup>

Second, the nominal daily wage (summer and winter) still remained fixed, as it had been from the early fifteenth century (and from 1363 in the Oxford and Cambridge colleges) at 6d; and, as noted earlier, only in 1536 was that wage raised, to 6½d per day (an 8.33 percent rise). Third, therefore, with an inflation that began around 1516-20, and which raised the price level, or composite price index, by 47.3 percent, by the late 1520s (though moderating to an index of 142.6 in 1536-40), these building craftsmen did suffer a significant decline in their real wage over this period. By the late 1520s, it had fallen to just about two-thirds of the level prevailing at the beginning of the century (which was 93.7 percent of the Golden Age real wage level for 1451-75). By the end of this period, in 1536-40, those craftsmen had regained some of that loss, achieving a real-real wage that was about three-quarters of that for the base period 1501-05. Since the extent of inflation was about the same in both countries, the losses that the English craftsmen suffered in their real wages must be attributed to continuous 'wage stickiness', i.e. to the failure to achieve a raise in nominal money-wages during this inflation.

#### **CHANGES IN THE RELATIVE AND ABSOLUTE LEVELS OF REAL WAGES IN ENGLAND AND THE LOW COUNTRIES, 1501-40**

The penultimate Table 16 permits a rather different comparison of the real incomes and purchasing

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<sup>104</sup> See Munro, 'Urban Wage Structures (n. 98)', pp. 65-78. In Great Britain, the 1833 Factory Act stipulated a maximum working day of nine hours for children, aged nine to thirteen; and for those aged thirteen to eighteen, a maximum of 69 hours a week, with no more than 12 hours per day. The 1844 Factory Act limited the working day for women to 12 hours per day, and for children aged eight to thirteen, to 6.5 hours. Fielden's Act was passed at a time of great labour unrest, on the eve of the 1848 Chartists's Revolt. See John H. Clapham, *An Economic History of Modern Britain*, vol. II: *The Early Railway Age, 1820 - 1850* (Cambridge, 1964), pp. 572-78; S.G. Checkland, *The Rise of Industrial Society in England, 1815 - 1885* (London, 1964), pp. 244-49; John Derry, *A Short History of Nineteenth-Century England* (New York, 1963), pp. 124-37, 151-54. In the U.S., New Hampshire's state legislature also enacted, in the same year 1847, a maximum ten-hour day, but the legislation applied only to women. It proved to be unenforceable; and the effective state legislation dates only from 1887. See Claudia Goldin, *Understanding the Gender Gap: An Economic History of American Women* (New York, 1990), pp. 189-92, and Table 7.1; Jeremy Atack and Peter Passell, *A New Economic View of American History: From Colonial Times to 1940*, 2nd edition (New York, 1994), pp. 542-43.

power of master craftsmen's wages, in England and the Low Countries, in terms of those individual commodities that were common to both regions. Such a table may permit us to ascertain whether labour and commodity markets were 'efficient' in the early sixteenth-century Low Countries and England: i.e. in the sense that if they were fairly 'efficient', we should expect to find relative commodity values and relative real wages comparable in the two regions. If they were not by any means that closely comparable, they did correspond to each other, in many commodities, and in real wages, rather more than most historians would expect for this 'pre-modern' era.

The columns for this Table 16 are set out in the same fashion, with the first set of columns for Antwerp, the second set for southern England, and the third set for both:

- (1) The years of the eight quinquennia, from 1501-05 to 1536-40;
- (2) The quinquennial mean values of the mean daily summer wage for a master mason at Antwerp in *d groot* Flemish;
- (3) The quinquennial mean number (harmonic mean) of litres of red Rhenish wine purchased with that daily wage by an Antwerp master mason;
- (4) The quinquennial mean number (harmonic mean) of North Sea herrings so purchased;
- (5) The quinquennial mean number (harmonic mean) of litres of peas so purchased;
- (6) The quinquennial mean number (harmonic mean) of litres of wheat so purchased;
- (7) The quinquennial mean number (harmonic mean) of kilograms of sugar so purchased;
- (8) The quinquennial mean daily wage (summer and winter) for a master mason in southern England (Oxford-Cambridge), in *d* sterling;
- (9) The quinquennial mean number (harmonic mean) of litres of red Bordeaux wine (claret) purchased with that daily wage by an English master mason (Oxford-Cambridge);
- (10) The quinquennial mean number (harmonic mean) of North Sea herrings so purchased;
- (11) The quinquennial mean number (harmonic mean) of litres of peas so purchased;

(12) The quinquennial mean number (harmonic mean) of litres of wheat so purchased;

(13) The quinquennial mean number (harmonic mean) of kilograms of sugar so purchased.

The final set of columns, 14 to 18, provide a comparison of the purchasing powers of wages in the two regions by estimating the percentage advantage (+) or disadvantage (-) that the English master mason enjoyed in purchasing wine, herrings, peas, wheat, and sugar, during each quinquennium, over his Antwerp counterpart.

Thus, in purchasing wine, the English mason did enjoy such an advantage, from 10 to 16 percent, until 1516-20; but by the final quinquennium, the disadvantage was almost one-third. In purchasing herrings, he enjoyed such an advantage only in the years 1506-15, and a major one in 1521-25, but significant disadvantages in the other quinquennia. Peas were the only commodity for which the English mason enjoyed a consistent advantage in every quinquennia. In purchasing wheat, he enjoyed a very significant advantage in 1506-10 and in 1521-25, and a relatively minor disadvantage in 1511-20 and 1526-30. Finally, for sugar, which had become a very important item in Iberian trade with the Antwerp market, the English master mason suffered a disadvantage in each and every quinquennium, and very major ones in 1516-20, and in 1526-40, the final quinquennia in this survey.<sup>105</sup>

Thus one set of tables indicates a *relative* decline in the purchasing power of an English craftsman's wage over this period, because of nominal wage stickiness during sustained inflation. On the other hand, even if the Antwerp building craftsmen enjoyed earlier and steeper rises in their money wages, their purchasing power, in *absolute* terms was not necessarily higher, certainly not consistently higher, than that of their English counterparts, over these four decades that encompassed the Golden Age of Erasmus, and also the beginnings of the early-modern Price Revolution era, which had so decisively ended the late-medieval era of price stability or even price deflation.

#### A NEW PERSPECTIVE ON THE INCOMES OF ERASMUS, IN 1526

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<sup>105</sup> See Van der Wee, *Antwerp Market* (n. 1), vol. I, Appendix 26, pp. 306-18, 317-24



The correspondence of Erasmus, especially with Erasmus Schets, in *CWE 12*, for the calendar year 1526, is especially rich in references to his receipts of various forms of incomes. Apart from the omission of some trivial receipts, the following and final Table xxx presents twelve such specific references, with the data organized by the following columns:

- (1) The date of the epistle;
- (2) the epistle number;
- (3) the place in which the letter was written;
- (4) Erasmus's correspondent;
- (5) the name of the coin or currency designated in the epistle;
- (6) the value of the coin or currency unit in d. *groot* Flemish (i.e. exchange rate);
- (7) the value of the coin or currency unit in livres (£) tournois (exchange rate);
- (8) the value of the coin or currency unit in d. sterling English (exchange rate);
- (9) the amount (number) of coins or currency units;
- (10) the value of the specified sum in pounds (£) *groot* Flemish;
- (11) the value of the specified sum in livres (£) tournois;
- (12) the value of the specified sum in pounds (£) sterling English;
- (13) the equivalent value of this sum in terms of the number of days' wages for an Oxford master mason in 1526 (6d sterling per day );
- (14) similarly, the equivalent value in terms of the number days' wages for an Antwerp master mason in 1526, then earning 11d *groot* Flemish per day (16.5d *groot* Brabant);
- (15) the number of years' wage income for an Antwerp mason that this sum represented.
- (16 - 17) Remarks: indications of how these sums were transmitted or remitted to Erasmus.

According to Van der Wee's tabulated data on annual employment in the Antwerp-Lier region,

building craftsmen were employed for 230 days in this year.<sup>106</sup> Thus the annual wage income for a master mason in Antwerp that year as £10 10s 10d *groot* Flemish. If the Oxford master mason had similarly employed for 230 days, his annual money-wage income would have been £5 15s 0d sterling.

With those figures in mind, and with the other data in this table, we can readily see that Erasmus was far from being poor. Indeed, since clearly many of his stipends and benefices (especially those from the Low Countries) are not mentioned in these epistles, Erasmus was certainly far richer than these data would indicate. Care was taken to avoid duplicate references from the epistles in this table; but not all the epistles clearly distinguish between specific gifts, annual incomes (from a variety of sources), and reimbursements for expenses incurred. The exchange rates utilised here are the official rates (or rates so deduced from calculations), rather than indications of possibly higher market rates found in the epistles; and thus the total sums may be understated. Especially given the incomplete record of his finances discerned from these epistles, one may be astonished to find that the total payments so indicated for the calendar year 1526 (ns) amount to £534.420 sterling (or £789.206 *groot* Flemish); and that amount is equivalent to at least the annual wage incomes of 82 Antwerp master masons or 93 Oxford master masons, and very likely more.

Three more specific examples of actual annuity incomes may more effectively establish the august level of Erasmus's standard of living in this year. In Epistle 1750, dated 8 September 1526, we learn that Erasmus was receiving an annuity of 120 English gold rose crowns from the Bishop of London; and with the revaluation of those crowns in November 1526, that annuity was worth £30 sterling (£42 *groot* Flemish), equivalent to 1,200 days' income for an Oxford master mason, and 1,008 days' income for an Antwerp master mason. In Epistle 1769, dated December 1526, we find that Erasmus was also receiving another English annuity, this one from the Bishop of Lincoln, worth 15 gold angel-nobles or £5 12s 6d: the equivalent of 225 days' wages of an Oxford mason. But the same letter indicates an even more important annuity from Courtrai (Kortijk), paid in Bruges at Candlemas (2 February): 130 Rhenish gold florins, worth £34 13s 4d *groot*

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<sup>106</sup> Van der Wee (n. 1), *Antwerp Market*, vol. I, Appendix 48, p. 542.

Flemish, or £23 16 8d sterling, the equivalent of 832 days' wages for an Antwerp master mason or 953 days' wages for an Oxford master mason. But surely the most impressive of all was the offer of a benefice from the Bishop of Trent, in December 1526: 600 Rhenish gold florins a year, then worth £110 sterling or £160 *groot* Flemish, an amount equal to 4,400 days' wages of an Oxford mason or 3,840 days' wages of an Antwerp master mason (i.e. virtually 17 years' wage income). Indeed, that same letter, from Johannes Fabri, also informed Erasmus that he would be receiving a gift of 100 Rhenish florins from this bishop, as a reward for the recent book that Erasmus had dedicated to him.<sup>107</sup> In the following March 1527, Erasmus informs his good friend Polidor Vergilio (Vergel) that Pope 'Clement VII twice sent me 200 [Florentine] florins and made all sorts of promises'; and *each* of those gifts was then worth the equivalent of 1660 days' wages for an Antwerp master mason and 1867 days' wages for an Oxford master mason.<sup>108</sup>

Of course, such income disparities are not unknown today, when Chief Executive Officers of many large multi-national corporations may command combined salaries and benefits that are more than a hundred times those earned by still well paid steel- or auto-workers. But certainly not even the most renowned academic scholars (let alone clerics) would today receive incomes so much higher than those in the building trades. Senior professors at the University of Toronto may command about two and one half times the pre-tax money-wage incomes of senior carpenters; but no more.<sup>109</sup> The Age of Erasmus was, however, an entirely different era; and, for this particular and most eminent scholar (formerly Professor of Divinity and of Greek at Cambridge), evidently a very Golden Age.

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<sup>107</sup> Epistle 1771: Johannes Fabri to Erasmus, dated Esslingen 20 December 1526. The bishop's offer of this handsome annuity was evidently conditional upon Erasmus's agreement to move to Trent.

<sup>108</sup> Epistle 1796: Erasmus to Polidoro Virgilio, Basel, 24 March 1527.

<sup>109</sup> At the University of Toronto, a senior Full Professor at the University of Toronto (in Economics), aged about 60, would currently (2001) earn about \$125,000 CAD per annum (gross pay, but before benefits). The highest hourly rate for skilled carpenters in Toronto, equivalent to the Renaissance master carpenter, is currently \$27.15 per hour. Working 37.5 hours per week, and about 49 weeks a year, they would expect to receive an annual income of about \$50,000.00 CAD (apart from benefits). The difference in after-tax incomes would be, of course, significantly less, with marginal tax rates of 49% in the top tax bracket.



## Money, Wages, and Real Incomes in the Age of Erasmus:

### The Purchasing Power of Coins and of Building Craftsmen's Wages in England and the Low Countries, 1500 - 1540

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**Table 1. A                    The Gold Coinages of the Habsburg Netherlands, France, and England, 1500 - 1540****A.    The Burgundian Habsburg Gold Coinages, 1496 - 1556**

<b>Date</b>	<b>Name</b>	<b>Carats</b>	<b>Grains maximum 12</b>	<b>Percent Purity</b>	<b>Taille: no. cut to Marc</b>	<b>Weight in Grams</b>	<b>Pure Gold in Grams</b>	<b>Grams Pure Gold in £ groot Flemish</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
<b>10 Apr 1496</b>	Toison d'or	23	9.500	99.132%	54.500	4.4909	4.4519	11.1297
	Philippus Florin	16	0.000	66.667%	74.000	3.3075	2.2050	11.0249
<b>20 Feb 1500</b>	Toison d'or	23	9.500	99.132%	54.500	4.4909	4.4519	10.6845
	Philippus Florin	16	0.000	66.667%	74.000	3.3075	2.2050	10.5839
	Philippus Florin	15	11.000	66.319%	74.000	3.3075	2.1935	10.5288
<b>15 Aug 1521</b>	Philippus Florin	15	11.000	66.319%	74.000	3.3075	2.1935	9.7129
<b>15 Aug 1521 to 1556</b>	réal d'or	23	9.500	99.132%	46.000	5.3207	5.2745	9.9676
	demi-réal	18	0.000	75.000%	70.125	3.4902	2.6177	9.9721
	Carolus florin	14	0.000	58.333%	84.000	2.9137	1.6997	9.7124

**B. The French Gold Coinages, 1500 - 1541**

<b>Year</b>	<b>Name</b>	<b>Carats</b>	<b>Grains</b>	<b>Percent</b>	<b>Taille: no.</b>	<b>Weight</b>	<b>Pure Metal</b>	<b>Grams Pure</b>
			<b>maximum 12</b>	<b>Purity</b>	<b>to Marc</b>	<b>in Grams</b>	<b>in Grams</b>	<b>Gold in £</b>
<b>1</b>	<b>2</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>1494</b>	Ecu soleil	23	1.500	96.354%	70.00	3.496	3.369	1.8588
<b>1507</b>	Ecu p.-epic	23	1.500	96.354%	70.00	3.496	3.369	1.8588
<b>1515</b>	Ecu soleil	23	1.500	96.354%	70.00	3.496	3.369	1.8588
<b>1519</b>	Ecu soleil	22	9.000	94.792%	71.50	3.423	3.245	1.7903
<b>1519</b>	Ecu soleil	23	0.000	95.833%	71.17	3.439	3.296	1.6479
<b>1541</b>	Ecu croisee	23	0.000	95.833%	71.17	3.439	3.296	1.4648
<b>1550</b>	Henri d'or	23	0.000	95.833%	67.00	3.653	3.501	1.4003

\*In 1526, England's mints switched from the Tower Pound of 349.914 grams to the Troy Pound of 373.242 grams

**Table 1. The Gold Coinages of the Habsburg Netherlands, France, and England, 1500 - 1540****A. The Burgundian Habsburg Gold Coinages, 1496 - 1556**

<b>Date</b>	<b>Name</b>	<b>Value in shillings and d groot</b>	<b>Value in pounds (£)</b>	<b>Value in decimal</b>	<b>Traite of Marc Fine Gold in £ groot Flem.</b>	<b>Value of 1 kg. Fine Gold in £ groot Flem.</b>	<b>Value of 1 kg. Fine Silver (DG) in £ groot Flem.</b>	<b>Ratio of Gold: Silver</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
<b>10 Apr 1496</b>	Toison d'or	8	0.000	0.400	21.9909	89.849	8.527	10.537
	Philippus Florin	4	0.000	0.200	22.2000	90.704	8.527	10.638
<b>20 Feb 1500</b>	Toison d'or	8	4.000	0.417	22.9072	93.593	8.527	10.976
	Philippus Florin	4	2.000	0.208	23.1250	94.483	8.527	11.081
	Philippus Florin	4	2.000	0.208	23.2461	94.978	8.527	11.139
<b>15 Aug 1521</b>	Philippus Florin	4	6.200	0.226	25.1987	102.956	8.814	11.681
<b>15 Aug 1521 to 1556</b>	réal d'or	10	7.000	0.529	24.5548	100.325	8.814	11.382
	demi-réal	5	3.000	0.263	24.5438	100.280	8.814	11.377
	Carolus florin	3	6.000	0.175	25.2000	102.961	8.814	11.681

## B.

## The French Gold Coinages, 1500 - 1541

Year	Name	Official		Value in	Traite of	Value of 1 kg.	Value of 1	Ratio of
		Values in	and in	decimal	Marc Fine	Fine Gold	kg.	
Column 1	2	shillings tournois	pence (d.) tournois	pounds (£) tournois	in livres (£) tournois	in livres (£) tournois	Fine Silver (DG) in livres (£) tournois	Gold: Silver
		3	4	5	6	7	8	9
1494	Ecu soleil	36	3.000	1.813	131.6757	537.9943	46.045	11.684
1507	Ecu p.-epic	36	3.000	1.813	131.6757	537.9943	48.887	11.005
1515	Ecu soleil	36	3.000	1.813	131.6757	537.9943	48.887	11.005
1519	Ecu soleil	36	3.000	1.813	136.7143	558.5809	55.374	10.087
1519	Ecu soleil	40	0.000	2.000	148.5217	606.8232	55.374	10.959
1541	Ecu croisee	45	0.000	2.250	167.0870	682.6761	57.982	11.774
1550	Henri d'or	50	0.000	2.500	174.7826	714.1186	63.486	11.248

C. **England, 1464 - 1526**

<b>Date</b>	<b>Name</b>	<b>Fineness in Carats</b>	<b>Fineness in Percentage</b>		<b>No. Cut to Tower Pound 349.9144 g.</b>	<b>No. Cut to Troy Pound 373.242 g.</b>	<b>Weight of Gold Coin</b>	<b>Grams of Pure Gold in Coin</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
<b>1464 Aug</b>	Angel-Noble	23	3.500	99.479%	67.500	72.000	5.184	5.157
	Ryal, Rose Noble	23	3.500	99.479%	45.000	48.000	7.776	7.735
<b>1489 Oct</b>	Sovereign	23	3.500	99.479%	22.500	24.000	15.552	15.471
<b>1526 August</b>	Angel-Noble	23	3.500	99.479%	67.500	72.000	5.184	5.157
	Ryal, Rose Noble	23	3.500	99.479%	45.000	48.000	7.776	7.735
	Sovereign	23	3.500	99.479%	22.500	24.000	15.552	15.471
	Rose Crown	23	3.500	99.479%	110.000	117.333	3.181	3.164
<b>1526 Nov*</b>	Angel-Noble	23	3.500	99.479%	67.500	72.000	5.184	5.157
	St. George Noble	23	3.500	99.479%	75.938	81.000	4.608	4.584
	Crown	22	0.000	91.667%	101.250	108.000	3.456	3.438

\* In November 1526, the English mints switched the metrological unit from the Tower Pound of (11.25 Troy ounces), weighing 349.914 grams to the Troy Pound of 373.247 grams.

C. **England, 1464 - 1526**

<b>Date</b>	<b>Name</b>	<b>Grams of Pure Gold in £ sterling</b>	<b>Official Values in shillings</b>	<b>and in pence</b>	<b>Value in decimal £ sterling</b>	<b>Nominal Value of Tower lb. in £ sterling</b>	<b>Nominal Value of Troy lb. in £ sterling</b>
<b>1</b>	<b>2</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
<b>1464 Aug</b>	Angel-Noble	15.471	6.000	8.000	0.333	22.500	24.000
	Ryal, Rose Noble	15.471	10.000	0.000	0.500	22.500	24.000
<b>1489 Oct</b>	Sovereign	15.471	20.000	0.000	1.000	22.500	24.000
<b>1526 Aug</b>	Angel-Noble	14.064	7.000	4.000	0.367	24.750	26.400
	Ryal, Rose Noble	14.064	11.000	0.000	0.550	24.750	26.400
	Sovereign	14.064	22.000	0.000	1.100	24.750	26.400
	Rose Crown	14.064	4.000	6.000	0.225	24.750	26.400
<b>1526 Nov*</b>	Angel-Noble	13.752	7.000	6.000	0.375	25.313	27.000
	St. George Noble	13.752	6.000	8.000	0.333	25.313	27.000
	Crown	13.752	5.000	0.000	0.250	25.313	27.000

**C. England, 1464 - 1526**

<b>Date</b>	<b>Name</b>	<b>Value of 1 kg. Fine Gold in £ sterling Pure Gold</b>	<b>Value of 1 kg. Fine Silver (DG) in £ sterling</b>	<b>Ratio Gold: Silver</b>
<b>1</b>	<b>2</b>	<b>16</b>	<b>17</b>	<b>18</b>
<b>1464 Aug</b>	Angel-Noble	64.638	5.793	11.158
	Ryal, Rose Noble	64.638	5.793	11.158
<b>1489 Oct</b>	Sovereign	64.638	5.793	11.158
<b>1526 Aug</b>	Angel-Noble	71.102	5.793	12.274
	Ryal, Rose Noble	71.102	5.793	12.274
	Sovereign	71.102	5.793	12.274
	Rose Crown	71.102	5.793	12.274
<b>1526 Nov*</b>	Angel-Noble	72.718	6.518	11.157
	St. George Noble	72.718	6.518	11.157
	Crown	72.718	6.518	11.157

**Sources:**

**Habsburg Netherlands:**

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Table 1.B

## Official Values of Gold Coins, 1500 - 1540

Gold Coin	Country of Origin	Years	in d. groot Flanders	in d. tournois France	in £ tournois France	in d. sterling England
Column 1	2	3	4	5	6	7
Philippus Florin	Flanders	1500-1520	50	294	1.225	36
Carolus Florin	Flanders	1521-1526	42	247	1.029	25
Carolus Florin	Flanders	1526-1540	42	247	1.029	26
Ecu au soleil	France	1500-1519	74	435	1.813	51
Ecu au soleil	France	1521-1526	76	960	4.000	52
Ecu au soleil	France	1526-1540	76	960	4.000	56
Angel-Noble	England	1500-1520	116	682	2.842	80
Angel-Noble	England	1521-1526	116	732	3.050	80
Angel-Noble	England	1526-1540	119	732	3.050	90
Rose Crown	England	August 1526	70	450	1.875	54
Rose Crown	England	1526-1540	76	480	2.000	60
Ducat & Florin	Italy	1500-1520	79	498	2.075	54
Ducat & Florin	Italy	1521-1526	80	546	2.275	54
Ducat & Florin	Italy	1526-1540	80	546	2.275	56
Rhenish Florin	Four Imperial Electors	1500-1520	56	345	1.438	39
Rhenish Florin	Four Imperial Electors	1521-1526	59	360	1.500	39
Rhenish Florin	Four Imperial Electors	1526-1540	59	360	1.500	40

**Sources:** see sources for Table 1.A; and *CWE* 1, 316-17, 336-39; *CWE* 8, 349-50.

**Table 2. The Silver Coinages of the Habsburg Netherlands, France, and England, 1500 - 1540**

**A. The Habsburg Netherlands, 1496 - 1556**

<b>Date</b>	<b>Name</b>	<b>Value in d. groot Flemish</b>	<b>Taille to marc</b>	<b>Weight in grams</b>	<b>Titre deniers</b>	<b>Titre grains</b>	<b>Type</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>10 Apr 1496</b>	Toison d'argent	6	72.00	3.3993	11	0.00	AR
<b>10 Apr 1496</b>	double patard	4	79.00	3.0981	8	0.00	AR
<b>10 Apr 1496</b>	patard, stuiver	2	79.00	3.0981	4	0.00	AR
<b>20 Feb 1500</b>	Toison d'argent	6	72.00	3.3993	11	0.00	AR
<b>20 Feb 1500</b>	double patard	4	79.00	3.0981	8	0.00	AR
<b>20 Feb 1500</b>	patard, stuiver	2	80.00	3.0594	4	0.00	AR
<b>Sept 1505 to</b>	réal; royal d'Espagne groot	6 1/2 1	71.25 134.00	3.4351 1.8265	11 3	5.00 6.00	AR AR
<b>Aug 1506 to</b>	demi groot gigot; quart de gros	1/2 1/4	224.00 316.00	1.0926 0.7745	2 1	16.00 20.00	AR AR
<b>July 1507</b>	quadruple mite double mite	1/6 1/12	162.00 226.00	1.5108 1.0830	0 0	12.00 7.50	AR AR
<b>20 Feb. 1521 to 1556</b>	double Carolus; réal Carolus; demi-réal patard, stuiver	6 3 2	80.00 78.50 80.00	3.0594 3.1179 3.0594	11 5 3	5.00 12.00 17.00	AF AF AF

**B. France, 1488 - 1541**

<b>Date</b>	<b>Name</b>	<b>Value in d. tournois</b>	<b>Taille to marc de Troyes</b>	<b>Weight in grams</b>	<b>Titre deniers</b>	<b>Titre grains</b>	<b>Type</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>April 1488</b>	Blanc Couronne (douzain)	12	86.000	2.846	4	12	AR
<b>Nov 1488</b>	Karolus	10	92.000	2.660	4	0	AR
<b>May 1489</b>	Gros de Roi	36	69.000	3.547	11	12	AR
<b>April 1498</b>	Blanc Couronne (douzain)	12	86.000	2.846	4	12	AR
<b>Nov. 1507</b>	Grand Blanc (douzain)	12	86.000	2.846	4	12	AR
<b>Feb 1512</b>	Gros	30	45.000	5.439	6	0	AR
<b>Feb 1512</b>	Demi-gros	15	68.000	3.599	4	12	AR
<b>Feb 1512</b>	Ludovicus	10	92.000	2.660	4	0	AR
<b>April 1513</b>	Teston	120	25.500	9.598	11	18	AR
<b>Jan. 1515</b>	Teston	120	25.500	9.598	11	18	AR
<b>Jan. 1515</b>	Blanc Couronne (douzain)	12	86.000	2.846	4	12	AR
<b>July 1519</b>	Blanc Couronne (douzain)	12	92.000	2.660	4	6	AR
<b>July 1519</b>	Dizain	10	98.000	2.497	3	18	AR
<b>Sept 1521</b>	Teston	120	25.500	9.598	11	6	AR
<b>Feb. 1540</b>	Douzain Salam.	12	92.000	2.660	4	4	AR
<b>Mar. 1541</b>	Douzain	12	91.000	2.690	3	16	AR

## C. England, 1464 - 1526

Column 1	2	3	4	5	6	7	8
Date	Name	Value in d. sterling	No. of Coins to the Tower Pound 349.9144 g.	No. of Coins to the Troy Pound*** 373.242 g.	Fineness:** ounces [out of 12] oz.	Fineness: pennyweight [out of 20] dwt.	Percentage Fineness
1464 Aug	penny	1	450.000	480.00	11	2	92.500%
1504	shilling	12	37.500	40.00	11	2	92.500%
1526 Nov**	penny	1	506.250	540.00	11	2	92.500%
1526 Nov**	shilling	12	42.188	45.00	11	2	92.500%

**A. The Habsburg Netherlands, 1496 - 1556**

<b>Date</b>	<b>Name</b>	<b>Grams of Pure Silver in Coin</b>	<b>Value in d. groot</b>	<b>G. Silver per d gr.</b>	<b>Traite per Marc AR in £ groot</b>	<b>Traite per Marc AF in £ groot</b>	<b>Value of 1 kg pure silver in £ groot</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>10 Apr 1496</b>	Toison d'argent	2.98623	6.000	0.49771	1.964	2.049	8.372
<b>10 Apr 1496</b>	double patard	1.97937	4.000	0.49484	1.975	2.061	8.420
<b>10 Apr 1496</b>	patard, stuiver	0.98968	2.000	0.49484	1.975	2.061	8.420
<b>20 Feb 1500</b>	Toison d'argent	2.98623	6.000	0.49771	1.964	2.049	8.372
<b>20 Feb 1500</b>	double patard	1.97937	4.000	0.49484	1.975	2.061	8.420
<b>20 Feb 1500</b>	patard, stuiver	0.97731	2.000	0.48866	2.000	2.087	8.527
<b>Sept 1505</b>	réal; royal d'Espagne	3.07482	6.500	0.47305	2.066	2.156	8.808
<b>to</b>	groot	0.47407	1.000	0.47407	2.062	2.151	8.789
<b>Aug 1506</b>	demi groot	0.23269	1.000	0.23269	4.200	4.383	17.906
<b>to</b>	gigot; quart de gros	0.11340	0.250	0.45360	2.155	2.248	9.186
<b>July 1507</b>	quadruple mite	0.06033	0.167	0.36197	2.700	2.817	11.511
	double mite	0.02703	0.083	0.32433	3.013	3.144	12.847
<b>20 Feb. 1521</b>	double Carolus; réal	2.85758	6.000	0.47626		2.141	8.749
<b>to</b>	Carolus; demi- réal	1.42902	3.000	0.47634		2.141	8.747
<b>1556</b>	patard, stuiver	0.94544	2.000	0.47272		2.157	8.814

**B. France, 1488 - 1541**

Date	Name	Grams of Pure Silver	G. Silver Traite per		Traite per		Value of 1	Value of 1
			per d.t.	Marc AR	Marc AF	kg pure silver in £	kg pure silver in £	
			in £	in £	groot	in £	in £	
Column 1	2	3	4	5	6	7	8	
<b>April 1488</b>	Blanc Couronne (douzain)	1.023	0.085	11.467	11.965	48.887	48.887	
<b>Nov 1488</b>	Karolus	0.850	0.085	11.500	12.000	49.029	49.029	
<b>May 1489</b>	Gros de Roi	3.258	0.090	10.800	11.270	46.045	46.045	
<b>April 1498</b>	Blanc Couronne (douzain)	1.023	0.085	11.467	11.965	48.887	48.887	
<b>Nov. 1507</b>	Grand Blanc (douzain)	1.023	0.085	11.467	11.965	48.887	48.887	
<b>Feb 1512</b>	Gros	2.606	0.087	11.250	11.739	47.963	47.963	
<b>Feb 1512</b>	Demi-gros	1.294	0.086	11.333	11.826	48.318	48.318	
<b>Feb 1512</b>	Ludovicus	0.850	0.085	11.500	12.000	49.029	49.029	
<b>April 1513</b>	Teston	9.007	0.075	13.021	13.587	55.515	55.515	
<b>Jan. 1515</b>	Teston	9.007	0.075	13.021	13.587	55.515	55.515	
<b>Jan. 1515</b>	Blanc Couronne (douzain)	1.023	0.085	11.467	11.965	48.887	48.887	
<b>July 1519</b>	Blanc Couronne (douzain)	0.903	0.075	12.988	13.553	55.374	55.374	
<b>July 1519</b>	Dizain	0.748	0.075	13.067	13.635	55.708	55.708	
<b>Sept 1521</b>	Teston	8.623	0.072	13.600	14.191	57.982	57.982	
<b>Feb. 1540</b>	Douzain Salam.	0.885	0.074	13.248	13.824	56.481	56.481	
<b>Mar. 1541</b>	Douzain	0.788	0.066	14.891	15.538	63.486	63.486	

## C. England, 1464 - 1526

Date	Name	Weight of the Coin in Troy Grains	Weight of Coin in grams	Grams of Pure Silver in the coin	Value Tower lb. in shillings	Value Tower lb. in pence	Value Tower lb. in dec. £ st.	Value Troy lb. in shillings	Value Troy lb. in pence	Value Troy lb. in dec. £ st.	Value of kg Pure Silver in £ sterling
Column 1	2	3	4	5	6	7	8	9	10	11	12
1464 Aug	penny	12.000	0.778	0.719	37.000	6	1.875	40	0	2.000	5.793
1504	shilling	144.000	9.331	8.631	37.000	6	1.875	40	0	2.000	5.793
1526 Nov**	penny	10.667	0.691	0.639	42.000	2	2.108	45	0	2.250	6.517
1526 Nov**	shilling	128.000	8.294	7.672	42.000	2	2.108	45	0	2.250	6.517

## Notes:

\* By the monetary ordinance of February 1521 (ns), the Habsburg Netherlands' monetary authorities changed the standard of silver fineness from the former *argent-le-roi* (23/24 or 95.833% pure) to the new *argent fin* (100.00% pure). See the text.

\*\* Sterling silver fineness: 11 oz 2 dwt of pure silver and 18 dwt of copper = 92.50% pure silver (20 dwt to the ounce).

\*\*\* In 1526, the English royal mints switched from the Tower Pound of 349.914 grams to the Troy pound of 373.242 g.



**Sources:****Habsburg Netherlands:**

Algemeen Rijksarchief, Rekenkamer, registers nos. 17,880-85 (Antwerp mint accounts); nos. 18,123-56 (Bruges mint accounts).  
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**Table 3. Relative Values of Flemish (Burgundian-Habsburg), French, and English Silver Coins: in Flemish d groot**

	<b>Flemish</b>	<b>Silver content:</b>	<b>French</b>	<b>Silver content:</b>	<b>English</b>	<b>Silver content:</b>
<b>Year</b>	<b>Patard/Stuiver</b>	<b>Percentage</b>	<b>Douzain</b>	<b>Percentage</b>	<b>penny</b>	<b>Percentage</b>
	<b>= 2d groot Silver grams</b>	<b>change from previous coin</b>	<b>= 12 d tournois Silver grams</b>	<b>change from previous coin</b>	<b>= 1d sterl. Silver grams</b>	<b>change from previous coin</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>1499</b>	0.9773		1.02277		0.7193	
<b>1519</b>	0.9773	0.00%	0.90295	11.71%	0.7193	0.00%
<b>1521</b>	0.9454	3.26%	0.90295	0.00%	0.7193	0.00%
<b>1526</b>	0.9454	0.00%	0.90295	0.00%	0.6393	11.12%
<b>1540</b>	0.9454	0.00%	0.88525	1.96%	0.6393	0.00%
<b>1541</b>	0.9454	0.00%	0.78758	11.03%	0.6393	0.00%

**Table 3. Relative Values of Flemish (Burgundian-Habsburg), French, and English Silver Coins: in Flemish d groot**

<b>Year</b>	<b>English penny</b>	<b>Value of 1 kg</b>	<b>Value of 1 kg</b>	<b>Value of 1 kg</b>	<b>Flemish: French</b>	<b>English: Flemish</b>	<b>Flemish: English</b>	<b>English: French</b>
	<b>Value in d. groot</b>	<b>Fine Silver in £ groot</b>	<b>Fine Silver in £ tournois</b>	<b>Fine Silver in £ sterling</b>	<b>ratios per kg Ag</b>	<b>ratios per kg Ag</b>	<b>ratios per kg Ag</b>	<b>ratios per kg Ag</b>
<b>1</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>
<b>1499</b>	1.472	8.527	48.887	5.793	5.733	1.472	0.679	8.439
<b>1519</b>	1.472	8.527	55.374	5.793	6.494	1.472	0.679	9.559
<b>1521</b>	1.522	8.814	55.374	5.793	6.282	1.522	0.657	9.559
<b>1526</b>	1.352	8.814	55.374	6.518	6.282	1.352	0.739	8.496
<b>1540</b>	1.352	8.814	56.481	6.518	6.408	1.352	0.739	8.666
<b>1541</b>	1.352	8.814	63.486	6.518	7.203	1.352	0.739	9.741

**Sources:** See sources for Tables 1 and 2.

Table 4.

**Market Prices for Gold at the Antwerp Fairs and  
Official Values of Burgundian-Habsburg Gold Coins:  
by Mint Ordinances and Monetary Decrees  
Evaluations in Pounds Groot Flemish per Kilogram of Fine Metal**

Year	Grams of fine gold in £ groot Brabant on Antwerp market	Value of 1 kg. of fine gold at Antwerp in £ groot Flemish	Official Value of 1 kg Fine Gold in £ gr. Flemish Mint Ordinances	Grams gold in £ groot Br Monetary Decrees	Market Price as % of Mint Value
1	2	3	4	5	6
1500	7.2480	91.979	94.978	7.1040	96.84%
1501	7.2480	91.979	94.978	7.1040	96.84%
1502	7.2480	91.979	94.978	7.1040	96.84%
1503	7.2480	91.979	94.978	7.1040	96.84%
1504	7.2480	91.979	94.978	7.1040	96.84%
1505	7.2480	91.979	94.978	7.1040	96.84%
1506	7.2480	91.979	94.978	7.1040	96.84%
1507	7.2480	91.979	94.978	7.1040	96.84%
1508	7.2480	91.979	94.978	7.1040	96.84%
1509	7.2480	91.979	94.978	7.1040	96.84%
1510	7.2480	91.979	94.978	7.1040	96.84%
1511	7.2480	91.979	94.978	7.1040	96.84%
1512	7.1520	93.214	94.978	7.1040	98.14%
1513	7.1520	93.214	94.978	7.1040	98.14%
1514	7.0560	94.482	94.978	7.1040	99.48%
1515	7.0560	94.482	94.978	7.1040	99.48%
1516	7.0560	94.482	94.978	7.1040	99.48%
1517	6.9600	95.785	94.978	7.1040	100.85%
1518	6.9600	95.785	94.978	7.1040	100.85%
1519	6.9600	95.785	94.978	7.1040	100.85%
1520	6.9600	95.785	94.978	7.1040	100.85%
1521	6.5280	102.124	102.961	6.6240	99.19%
1522	6.1920	107.666	102.961	6.6240	104.57%
1523	6.1440	108.507	102.961	6.3840	105.39%
1524	6.0480	110.229	102.961	6.3840	107.06%
1525	5.9280	112.461	102.961	6.3840	109.23%
1526	6.3280	105.352	102.961	6.3840	102.32%
1527	7.0320	94.805	102.961	7.0320	92.08%

Table 4.

**Market Prices for Gold at the Antwerp Fairs and  
Official Values of Burgundian-Habsburg Gold Coins:  
by Mint Ordinances and Monetary Decrees  
Evaluations in Pounds Groot Flemish per Kilogram of Fine Metal**

Year	Grams of fine gold in £ groot Brabant on Antwerp market	Value of 1 kg. of fine gold at Antwerp in £ groot Flemish	Official Value of 1 kg Fine Gold in £ gr. Flemish Mint Ordinances	Grams gold in £ groot Br Monetary Decrees	Market Price as % of Mint Value
1	2	3	4	5	6
1537	6.3840	104.428	102.961	7.0320	101.42%
1538	6.5280	102.124	102.961	7.0320	99.19%
1539	7.0320	94.805	102.961	7.0320	92.08%
1540	6.9120	96.451	102.961	7.0320	93.68%

**Note:** The coinage changes of February 1521 initially tried to set gold values, with 0.0293 grams fine gold in the Brabant groot (0.04395 g in the Flemish groot); but the government was forced to adjust the rate in August to 0.0276 grams fine gold in the Brabant groot. According to Van der Wee, in March 1527, the government restored the original rate of February 1521; but it is not clear that this lower exchange rate held.

**Source:** Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy, fourteenth-sixteenth centuries* (The Hague, 1963), vol. I: *Statistics*, Table XVI, pp. 133-34.

**Table 5 The Van der Wee Basket of Consumables Price Index for Brabant: Commodity Prices and Price Indices for 1501 - 1505: in deniers of the Brabant pond groot and the Flemish pond groot**

Index: mean 1501-05 = 100											
Year	Rye	Barley	Beef	Herrings	Cheese	Butter	Charcoal	Tallow	Woollen	Linen	Total
Unit	126.00	162.00	23.50	40.00	4.50	4.50	162.00	1.35	1.13	1.80	in d.
	litres	litres	kg	fish	kg	kg	litres	kg	metres	metres	groot
Column 1	2	3	4	5	6	7	8	9	10	11	12
<b>1501</b>	54.80	53.00	56.30	11.50	7.30	23.40	11.40	8.20	25.40	23.40	274.700
<b>1502</b>	78.10	57.00	64.30	8.60	7.40	21.80	12.60	8.90	30.60	21.30	310.600
<b>1503</b>	48.70	57.00	64.30	8.60	9.50	24.60	10.20	9.00	30.10	22.40	284.400
<b>1504</b>	43.30	61.20	64.30	10.60	9.20	23.90	8.80	9.30	28.80	24.40	283.800
<b>1505</b>	48.70	57.00	75.00	16.60	7.60	23.90	7.80	9.30	33.60	25.50	305.000
<b>1501-05 Brab. gr.</b>	54.72	57.04	64.84	11.18	8.20	23.52	10.16	8.94	29.70	23.40	291.700
<b>1501-05 Flem. gr.</b>	36.48	38.03	43.23	7.45	5.47	15.68	6.77	5.96	19.80	15.60	194.467
<b>Percent Total</b>	18.76	19.55	22.23	3.83	2.81	8.06	3.48	3.06	10.18	8.02	100.000
<b>1451-75 Brab. gr.</b>	42.40	39.71	54.70	9.99	5.97	19.73	10.57	7.61	24.84	17.00	232.524
<b>1451-75 Flem. gr.</b>	28.27	26.47	36.47	6.66	3.98	13.15	7.05	5.07	16.56	11.33	155.016
<b>Percent Total</b>	18.24	17.08	23.53	4.30	2.57	8.48	4.54	3.27	10.68	7.31	100.000

**Table 5 The Van der Wee Basket of Consumables Price Index for Brabant: Commodity Prices and Price Indices for 1501 - 1505: in deniers of the Brabant pond groot and the Flemish pond groot**

Index: mean 1501-05 = 100						
Year	GRAINS	GRAINS 82.116	MEAT/FISH DAIRY	MEAT/FISH 90.388	INDUSTRIAL	INDUSTRIAL 60.020
Unit	TOTAL Value	Base 100= 1451-75	TOTAL Value	Base 100= 1451-75	TOTAL Value	Base 100= 1451-75
1	13	14	15	16	17	18
1501	107.800	131.278	98.500	108.975	68.400	113.962
1502	135.100	164.523	102.100	112.957	73.400	122.293
1503	105.700	128.720	107.000	118.379	71.700	119.460
1504	104.500	127.259	108.000	119.485	71.300	118.794
1505	105.700	128.720	123.100	136.191	76.200	126.958
<b>1501-05 Brab. gr.</b>	111.760	136.100	107.740	119.197	72.200	120.293
<b>1501-05 Flem. gr.</b>	74.507		71.827		48.133	
<b>Percent Total</b>	38.313		36.935		24.751	
<b>1451-75 Brab. gr.</b>	82.116	100.000	90.388	100.000	60.020	100.000
<b>1451-75 Flem. gr.</b>	54.744	100.000	60.259	100.000	40.01	100.000
<b>Percent Total</b>	35.315	100.000	38.873	100.000	25.812	100.000

Year	BASKET OF GOODS	INDEX 232.524	BASKET OF GOODS	INDEX 155.016	INDEX 194.467
Unit	TOTAL VALUE in d. gr. Brabant	Base 100= 1451-75	TOTAL VALUE in d. gr. Flemish	Base 100= 1451-75	Base 100= 1501-05
1	19	20	21	22	23
1501	274.700	118.138	183.133	118.138	94.172
1502	310.600	133.578	207.067	133.578	106.479
1503	284.400	122.310	189.600	122.310	97.497
1504	283.800	122.052	189.200	122.052	97.292
1505	305.000	131.169	203.333	131.169	104.559
1501-05 Brab. gr.	291.700	125.449	194.467	125.449	100.000
1501-05 Flem. gr.			194.467	125.449	
Percent Total			100.000		100.000
1451-75 Brab. gr.	232.524	100.000			
1451-75 Flem. gr.			155.016	100.000	
Percent Total	100.000	100.000	100.000	100.000	

**Source:** Van der Wee, Herman, 'Prijzen en lonen als ontwikkelingsvariabelen: Een vergelijkend onderzoek tussen Engeland en de Zuidelijke Nederlanden, 1400 - 1700,' in *Album offert à Charles Verlinden à l'occasion de ses trente ans de professoriat* (Ghent, 1975), pp. 413-35; republished in English translation as: 'Prices and Wages as Development Variables: A Comparison between England and the Southern Netherlands, 1400-1700,' *Acta Historiae Neerlandicae*, 10 (1978), 58-78.



Table 6.A

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

**Red Rhine Wine: per gelte of Lier (= 2.840 litres)**

Year Easter	Price per litre in d. groot Flemish	Litres Purchased with Burgundian Patard = 2d groot	Litres Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Litres Purchased with English penny = 1d sterling <sup>b</sup>	Litres Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup>	Litres Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup>	Litres Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	2.852	0.701	0.734	0.516	17.531		24.894
1506-10	2.923	0.684	0.716	0.504	17.108		24.294
1511-15	3.415	0.586	0.613	0.431	14.639		20.788
1516-20	3.310	0.604	0.632	0.445	15.106		21.502
1521-25	3.838	0.521	0.545	0.414	14.070	10.943	19.802
1526-30	3.451	0.580	0.607	0.409	15.649	12.171	22.024
1531-35	3.521	0.568	0.594	0.401	15.336	11.928	21.584
1536-40	3.468	0.577	0.604	0.407	15.571	12.110	21.914

Table 6.A The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

Red Rhine Wine: per gelte of Lier (= 2.840 litres)								
Year	Litres	Litres	Master	Litres of	Quantity	Price	Brabant:	CPI Index
Easter	Purchased with	Purchased with	Mason:	Wine Bought	Index	Relatives:	Basket of	Mean:
	Italian	English	Daily	with daily wage	1501-05	1501-05	Consumables	1501-05
	ducats/lorins <sup>f</sup>	angel noble <sup>g</sup>	Wage in d. groot Flemish		= 100	= 100	Value in d. groot Flemish	=100
1	9	10	11	12	13	14	15	16
1501-05	27.699	40.672	8.333	2.922	100.00	100.00	194.47	100.0000
1506-10	27.031	39.692	8.333	2.851	97.59	102.47	177.96	91.5118
1511-15	23.130	33.963	9.333	2.720	83.51	119.75	213.77	109.9280
1516-20	23.868	35.047	10.000	3.021	86.17	116.05	232.93	119.7806
1521-25	20.844	31.006	10.267	2.676	74.31	134.57	278.93	143.4350
1526-30	23.184	34.486	10.267	2.676	82.65	120.99	276.73	142.3037
1531-35	22.720	33.796	10.067	2.858	81.00	123.46	269.72	138.6973
1536-40	23.068	34.313	12.133	3.485	82.24	121.60	287.77	147.9808

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 24, pp. 294-99.

**Notes on coinage values in this table:**

<b>a</b>	value of the French blanc or douzain in d. groot Flemish			
	1500-18	2.093		
	1519-20	1.848		
	1521-39	1.910		
	1540-41	1.873		
<b>b</b>	value of the English sterling penny in d. groot Flemish			
	1500-20	1.472		
	1521-25	1.522		
	1526-40	1.352		
<b>c</b>	value of the Burgundian-Habsburg florin St. Philip in d. groot Flemish			
	1500-20	50.000		
	1521-40	54.000	estimated only by relative gold contents	
<b>d</b>	value of the Burgundian-Habsburg florin Carolus in d. groot Flemish			
	1521-48	42.000	originally issued Feb. 1521 at 40d	
<b>e</b>	value of the French écu au soleil in d. groot Flemish			
	1500-18	71.000	3.369	grams fine gold
	1519-20	72.000	3.245	grams fine gold
	1521-48	76.000	3.296	grams fine gold
<b>f</b>	value of Italian florins and ducats in d. groot Flemish			
	1500-20	79.000	3.559	grams fine gold
	1521-48	80.000	3.559	grams fine gold
<b>g</b>	value of the English angle-noble in d. groot Flemish			

1500-20	116.000	5.157	grams fine gold
1521-26	119.000	5.157	grams fine gold
1527-48	119.000	5.157	grams fine gold

Table 6.B

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

Butter: from Brussels, priced per 100 lb. weight of Brussels

1.0 lb. of Brussels = 467.670 grams

Years: From 1 May	Price in d. groot Flemish per kilogram	Kilograms Purchased with Burgundian Patard = 2d groot	Kilograms Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Kilograms Purchased with English penny = 1d sterling <sup>b</sup>	Kilograms Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup>	Kilograms Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup>	Kilograms Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	3.353	0.597	0.624	0.439	14.913		21.176
1506-10	3.443	0.581	0.608	0.428	14.524		20.624
1511-15	4.743	0.422	0.441	0.310	10.543		14.971
1516-20	4.811	0.416	0.415	0.306	10.393		14.834
1521-25	4.845	0.413	0.394	0.314	11.145	8.668	15.685
1526-30	4.738	0.422	0.403	0.285	11.396	8.864	16.039
1531-35	4.995	0.400	0.382	0.271	10.811	8.408	15.215
1536-40	4.892	0.409	0.389	0.276	11.038	8.585	15.534

**Table 6.B The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

**Butter: from Brussels, priced per 100 lb. weight of Brussels**

**1.0 lb. of Brussels = 467.670 grams**

<b>Years: From 1 May</b>	<b>Kilograms Purchased with Italian ducats/lorins <sup>f</sup></b>	<b>Kilograms Purchased with English angel noble <sup>g</sup></b>	<b>Master Mason: Daily Wage in d. groot Flemish</b>	<b>Kg of Butter Bought With Daily Wage</b>	<b>Quantity Index 1501-05 = 100</b>	<b>Price Relatives: 1501-05 = 100</b>	<b>Brabant: Basket of Consumables Value in d. groot Flemish</b>	<b>CPI Index Mean: 1501-05 =100</b>
<b>1</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>1501-05</b>	23.562	34.598	8.333	2.485	100.000	100.000	194.47	100.000
<b>1506-10</b>	22.948	33.695	8.333	2.421	97.391	102.679	177.96	91.512
<b>1511-15</b>	16.657	24.459	9.333	1.959	70.694	141.454	213.77	109.928
<b>1516-20</b>	16.420	24.111	10.000	2.079	69.689	143.495	232.93	119.781
<b>1521-25</b>	16.511	24.560	10.267	2.114	69.197	144.515	278.93	143.435
<b>1526-30</b>	16.883	25.114	10.600	2.229	70.758	141.327	276.73	142.304
<b>1531-35</b>	16.016	23.824	10.067	2.015	67.123	148.980	269.72	138.697
<b>1536-40</b>	16.352	24.324	12.133	2.471	68.531	145.918	287.77	147.981

**notes on coinage values:** See notes for Table 6A.

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 8, pp. 210-15.

Table 6.C

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

## Meat in Mechelen (Malines): Salted Beef

priced by the 100 lb. weight of Mechelen

1.0 lb. = 469.247 grams

Years: November	Price in d. groot Flemish per kilogram 1000.00 grams	Kilograms Purchased with Burgundian Patard = 2d groot	Kilograms Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Kilograms Purchased with English penny = 1d sterling <sup>b</sup>	Kilograms Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup>	Kilograms Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup>	Kilograms Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	1.842	1.086	1.136	0.799	27.140		38.539
1506-10	1.664	1.202	1.258	0.885	30.052		42.673
1511-15	1.615	1.238	1.296	0.911	30.951		43.950
1516-20	2.131	0.938	0.933	0.691	23.462		33.503
1521-25	2.370	0.844	0.806	0.642	22.787	17.723	32.071
1526-30	2.719	0.735	0.702	0.497	19.858	15.445	27.949
1531-35	2.941	0.680	0.650	0.460	18.362	14.281	25.843
1536-40	3.030	0.660	0.628	0.446	17.820	13.860	25.079

**Table 6.C The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

**Meat in Mechelen (Malines): Salted Beef**

**priced by the 100 lb. weight of Mechelen**  
1.0 lb. = 469.247 grams

<b>Years: November</b>	<b>Kilograms Purchased with Italian ducats/florins <sup>f</sup></b>	<b>Kilograms Purchased with English angel noble <sup>g</sup></b>	<b>Master Mason: Daily Wage in d. groot Flemish</b>	<b>Kg of Meat Bought With Daily Wage</b>	<b>Quantity Index 1501-05 = 100</b>	<b>Price Relatives: 1501-05 = 100</b>	<b>Brabant: Basket of Consumables Value in d. groot Flemish</b>	<b>CPI Index Mean: 1501-05 =100</b>
<b>1</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>1501-05</b>	42.882	62.966	8.333	4.523	100.000	100.000	194.47	100.000
<b>1506-10</b>	47.482	69.720	8.333	5.009	110.727	90.312	177.96	91.512
<b>1511-15</b>	48.902	71.806	9.333	5.768	114.039	87.689	213.77	109.928
<b>1516-20</b>	37.071	54.433	10.000	4.692	86.448	115.676	232.93	119.781
<b>1521-25</b>	33.759	50.216	10.267	4.340	77.741	128.632	278.93	143.435
<b>1526-30</b>	29.420	43.762	10.600	3.885	67.749	147.603	276.73	142.304
<b>1531-35</b>	27.203	40.464	10.067	3.422	62.643	159.634	269.72	138.697
<b>1536-40</b>	26.399	39.269	12.133	3.996	60.793	164.492	287.77	147.981

**Notes on coinage values:** see notes for Table 6A

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 10, pp. 225-26.



Table 6.D

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

**Flemish Red Herrings:**

**Dry Smoked Red Flemish Herrings: per stroo of 500 fish**

<b>Years: Lent</b>	<b>Price in d. groot Flemish per herring (dry, red smoked)</b>	<b>Number Purchased with Burgundian Patard = 2d groot</b>	<b>Number Purchased with French blanc or douzain = 12d tournois <sup>a</sup></b>	<b>Number Purchased with English penny = 1d sterling <sup>b</sup></b>	<b>Number Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup></b>	<b>Number Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup></b>	<b>Number Purchased with French écu au soleil <sup>e</sup></b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>1501-05</b>	0.172	11.628	12.169	8.558	290.698		412.791
<b>1506-10</b>	0.201	9.949	10.412	7.322	248.736		353.205
<b>1511-15</b>	0.243	8.234	8.617	6.060	205.847		292.303
<b>1516-20</b>	0.224	8.945	8.842	6.583	223.614		318.576
<b>1521-25</b>	0.328	6.090	5.816	4.633	164.434	127.893	231.425
<b>1526-30</b>	0.254	7.862	7.508	5.316	212.264	165.094	298.742
<b>1531-35</b>	0.230	8.681	8.290	5.870	234.375	182.292	329.861
<b>1536-40</b>	0.266	7.519	7.152	5.084	203.008	157.895	285.714

Table 6.D

**Flemish Red Herrings:**  
**Dry Smoked Red Flemish Herrings: per stroo of 500 fish**

<b>Years: Lent</b>	<b>Number Purchased with Italian ducats/florins <sup>f</sup></b>	<b>Number Purchased with English angel noble <sup>g</sup></b>	<b>Master Mason: Daily Wage in d. groot Flemish</b>	<b>Number Bought With Daily Wage</b>	<b>Quantity Index 1501-05 = 100</b>	<b>Price Relatives: 1501-05 = 100</b>	<b>Brabant: Basket of Consumables Value in d. groot Flemish</b>	<b>CPI Index Mean: 1501-05 =100</b>
<b>1</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>1501-05</b>	459.302	674.419	8.333	48.450	100.000	100.000	194.47	100.000
<b>1506-10</b>	393.002	577.067	8.333	41.456	85.565	116.870	177.96	91.512
<b>1511-15</b>	325.239	477.565	9.333	38.341	70.811	141.220	213.77	109.928
<b>1516-20</b>	353.309	518.784	10.000	44.723	76.923	130.000	232.93	119.781
<b>1521-25</b>	243.605	362.363	10.267	31.296	52.375	190.930	278.93	143.435
<b>1526-30</b>	314.465	467.767	10.600	41.819	67.610	147.907	276.73	142.304
<b>1531-35</b>	347.222	516.493	10.067	43.642	74.653	133.953	269.72	138.697
<b>1536-40</b>	300.752	447.368	12.133	45.478	64.662	154.651	287.77	147.981

**Notes on coinage values:** see notes for Table 6A

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 22, pp. 277-85.

Table 6.E

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

Eggs in Brussels: per hundred							
Years: From 1 May	Eggs: Price in d. groot Flemish per egg	Number Purchased with Burgundian Patard = 2d groot	Number Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Number Purchased with English penny = 1d sterling <sup>b</sup>	Number Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup>	Number Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup>	Number Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	0.108	18.515	19.376	13.626	462.868		657.272
1506-10	0.108	18.452	19.310	13.580	461.311		655.062
1511-15	0.111	18.001	18.838	13.248	450.018		639.026
1516-20	0.124	16.072	15.950	11.828	401.789		573.813
1521-25	0.127	15.700	14.994	11.944	423.902	329.701	596.603
1526-30	0.124	16.086	15.363	10.877	434.316	337.802	611.260
1531-35	0.139	14.388	13.742	9.729	388.489	302.158	546.763
1536-40	0.160	12.526	11.911	8.470	338.205	263.048	475.992

**Table 6.E The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

Eggs in Brussels: per hundred								
Years: From 1 May	Number Purchased with Italian ducats/Florins <sup>f</sup>	Number Purchased with English angel noble <sup>g</sup>	Master Mason: Daily Wage in d. groot Flemish	Number Bought With Daily Wage	Quantity Index 1501-05 = 100	Price Relatives: 1501-05 = 100	Brabant: CPI Index Basket of Consumables Value in d.	Mean: 1501-5 =100
1	9	10	11	12	13	14	15	16
1501-05	731.331	1073.853	8.333	77.145	100.000	100.000	194.47	100.000
1506-10	728.872	1070.242	8.333	76.885	99.664	100.337	177.96	91.512
1511-15	711.029	1044.042	9.333	83.523	97.224	102.855	213.77	109.928
1516-20	634.826	932.150	10.000	80.358	86.804	115.202	232.93	119.781
1521-25	628.003	934.154	10.267	80.378	84.798	117.928	278.93	143.435
1526-30	643.432	957.105	10.600	85.008	86.881	115.100	276.73	142.304
1531-35	575.540	856.115	10.067	72.379	77.714	128.677	269.72	138.697
1536-40	501.044	745.303	12.133	75.809	67.655	147.809	287.77	147.981

**Notes on coinage values:** see notes for Table 6A

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 7, pp. 204-08.

Table 6.F

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

Wheat in Lier: Prices per viertel of Lier  
 viertel = 86.606 litres  
 bushel = 36.368720l litres

Year To: Harvest average	Price in d. groot Flemish per litre	Purchased with Burgundian Patard = 2d groot	Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Purchased with English penny = 1d sterling <sup>b</sup>	Litres Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup>	Litres Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup>	Litres Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	0.420	4.762	4.984	3.505	119.052		169.053
1506-10	0.411	4.871	5.098	3.585	121.774		172.920
1511-15	0.413	4.846	5.071	3.566	121.143		172.023
1516-20	0.463	4.320	4.312	3.179	107.988		153.760
1521-25	0.718	2.787	2.662	2.120	75.256	58.533	105.916
1526-30	0.586	3.415	3.261	2.309	92.195	71.707	129.755
1531-35	0.656	3.049	2.912	2.062	82.323	64.029	115.862
1536-40	0.707	2.829	2.691	1.913	76.395	59.419	107.519

**Table 6.F The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

**Wheat in Lier: Prices per viertel of Lier**  
**viertel = 86.606 litres**  
**bushel = 36.368720l litres**

<b>Year To: Harvest average</b>	<b>Litres Purchased with Italian ducats/florins <sup>f</sup></b>	<b>Litres Purchased with English angel noble <sup>g</sup></b>	<b>Master Mason: Daily Wage in d. groot Flemish</b>	<b>Litres Bought With Daily Wage</b>	<b>Quantity Index 1501-05 = 100</b>	<b>Price Relatives: 1501-05 = 100</b>	<b>Brabant: CPI Index Basket of Consumables Value in d. groot Flemish</b>	<b>CPI Index Mean: 1501-05 =100</b>
<b>1</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>1501-05</b>	188.101	276.199	8.333	19.842	100.000	100.000	194.47	100.000
<b>1506-10</b>	192.404	282.517	8.333	20.296	102.287	97.764	177.96	91.512
<b>1511-15</b>	191.406	281.052	9.333	22.778	101.757	98.273	213.77	109.928
<b>1516-20</b>	170.620	250.531	10.000	21.598	90.707	110.246	232.93	119.781
<b>1521-25</b>	111.491	165.842	10.267	14.364	58.531	170.850	278.93	143.435
<b>1526-30</b>	136.585	203.170	10.600	17.975	71.705	139.461	276.73	142.304
<b>1531-35</b>	121.960	181.416	10.067	15.321	64.027	156.184	269.72	138.697
<b>1536-40</b>	113.178	168.353	12.133	17.154	59.417	168.303	287.77	147.981

Table 6.G

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

Peas in Mechelen: priced by the viertel of Mechelen = 86.499 litres

Year To: March	Price in d. groot Flemish per litre	Litres Purchased with Burgundian Patard = 2d groot	Litres Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Litres Purchased with English penny =1d sterling <sup>b</sup>	Litres Purchased with Burgundian- Habsburg florin St. Philip <sup>d</sup>	Litres Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup>	Litres Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	0.423	4.727	4.947	3.479	118.168		167.799
1506-10	0.355	5.626	5.888	4.141	140.649		199.721
1511-15	0.458	4.369	4.572	3.215	109.216		155.087
1516-20	0.428	4.669	4.646	3.437	116.735		166.187
1521-25	0.541	3.698	3.532	2.813	99.844	77.656	140.521
1526-30	0.475	4.213	4.023	2.848	113.741	88.465	160.079
1531-35	0.639	3.128	2.988	2.115	84.466	65.695	118.877
1536-40	0.567	3.527	3.351	2.385	95.230	74.067	134.027

**Table 6.G The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

**Peas in Mechelen: priced by the viertel of Mechelen = 86.499 litres**

<b>Year To: March</b>	<b>Litres Purchased with Italian ducats/Florins <sup>f</sup></b>	<b>Litres Purchased with English angel noble <sup>g</sup></b>	<b>Master Mason: Daily Wage in d. groot Flemish</b>	<b>Litres Bought With Daily Wage</b>	<b>Quantity Index 1501-05 = 100</b>	<b>Price Relatives: 1501-05 = 100</b>	<b>Brabant: Basket of Consumables Value in d. groot Flemish</b>	<b>CPI Index Mean: 1501-05 =100</b>
<b>1</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>1501-05</b>	186.705	274.150	8.333	19.695	103.925	100.000	194.47	100.000
<b>1506-10</b>	222.225	326.305	8.333	23.441	119.024	84.016	177.96	91.512
<b>1511-15</b>	172.561	253.381	9.333	20.595	92.424	108.197	213.77	109.928
<b>1516-20</b>	184.441	270.825	10.000	23.347	98.787	101.228	232.93	119.781
<b>1521-25</b>	147.916	220.026	10.267	19.004	78.234	127.821	278.93	143.435
<b>1526-30</b>	168.505	250.651	10.600	22.155	89.123	112.204	276.73	142.304
<b>1531-35</b>	125.134	186.137	10.067	15.729	66.184	151.093	269.72	138.697
<b>1536-40</b>	141.081	209.858	12.133	21.380	74.619	134.015	287.77	147.981

**Notes on coinage values:** see notes for Table 6A

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 6, pp. 199-203.



Table 6.H

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

Loaf Sugar: per pound of Antwerp = 470.156 grams

Year October	Price in d. groot Flemish per kilogram 1000.00 grams	Kilograms Purchased with Burgundian Patard = 2d groot	Kilograms Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Kilograms Purchased with English penny =1d sterling <sup>b</sup>	Kilograms Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup>	Kilograms Purchased with Burgundian- Habsburg florin Carolus <sup>d</sup>	Kilograms Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	8.150	0.245	0.257	0.181	6.135		8.711
1506-10	9.296	0.215	0.225	0.158	5.379		7.638
1511-15	15.952	0.125	0.131	0.092	3.134		4.451
1516-20	14.889	0.134	0.134	0.099	3.358		4.780
1521-25	16.199	0.123	0.118	0.094	3.334	2.593	4.692
1526-30	17.441	0.115	0.110	0.078	3.096	2.408	4.358
1531-35	12.016	0.166	0.159	0.113	4.494	3.495	6.325
1536-40	16.378	0.122	0.116	0.083	3.297	2.564	4.641

**Table 6.H The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

**Loaf Sugar: per pound of Antwerp = 470.156 grams**

<b>Year October</b>	<b>Kilograms Purchased with Italian ducats/lorins <sup>f</sup></b>	<b>Kilograms Purchased with English angel noble <sup>g</sup></b>	<b>Master Mason: Daily Wage in d. groot Flemish</b>	<b>Kilograms Bought With Daily Wage</b>	<b>Quantity Index 1501-05 = 100</b>	<b>Price Relatives: 1501-05 = 100</b>	<b>Brabant: Basket of Consumables Value in d. groot Flemish</b>	<b>CPI Index Mean: 1501-05 = 100</b>
<b>1</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
<b>1501-05</b>	9.693	14.232	8.333	1.022	100.000	100.000	194.47	100.000
<b>1506-10</b>	8.498	12.478	8.333	0.896	87.675	114.057	177.96	91.512
<b>1511-15</b>	4.952	7.272	9.333	0.582	51.093	195.720	213.77	109.928
<b>1516-20</b>	5.306	7.791	10.000	0.672	54.743	182.672	232.93	119.781
<b>1521-25</b>	4.939	7.346	10.267	0.635	50.315	198.747	278.93	143.435
<b>1526-30</b>	4.587	6.823	10.600	0.608	46.732	213.987	276.73	142.304
<b>1531-35</b>	6.658	9.904	10.067	0.838	67.831	147.425	269.72	138.697
<b>1536-40</b>	4.885	7.266	12.133	0.741	49.766	200.939	287.77	147.981

**Notes on coinage values:** see notes for Table 6A

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 26, pp. 306-24.

Table 6.1

## The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

Tallow Candles: from Brussels, Lier, Antwerp, Mechelen  
 Unweighted mean values  
 per stone of 8 lb. = 3,752.194 grams

Year Autumn	Price in d. groot Flemish per kilogram 1000.00 grams	Kilograms Purchased with Burgundian Patard = 2d groot	Kilograms Purchased with French blanc or douzain = 12d tournois <sup>a</sup>	Kilograms Purchased with English penny = 1d sterling <sup>b</sup>	Kilograms Purchased with Burgundian- Habsburg florin St. Philip <sup>c</sup>	Kilograms Purchased with Burgundian- Habsburg florin Carolus <sup>e</sup>	Kilograms Purchased with French écu au soleil <sup>e</sup>
Column 1	2	3	4	5	6	7	8
1501-05	4.224	0.473	0.496	0.348	11.837		16.809
1506-10	4.637	0.431	0.451	0.317	10.782		15.311
1511-15	4.685	0.427	0.447	0.314	10.673		15.156
1516-20	5.031	0.398	0.395	0.293	9.938		14.151
1521-25	5.677	0.352	0.336	0.268	9.513	7.399	13.388
1526-30	5.637	0.355	0.339	0.240	9.580	7.451	13.483
1531-35	5.450	0.367	0.350	0.248	9.908	7.706	13.945
1536-40	5.693	0.351	0.336	0.238	9.486	7.378	13.351

Table 6.I The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40

**Tallow Candles: from Brussels, Lier, Antwerp, Mechelen**  
**Unweighted mean values**  
**per stone of 8 lb. = 3,752.194 grams**

Year Autumn	Kilograms Purchased with Italian ducats/lorins <sup>f</sup>	Kilograms Purchased with English angel noble <sup>g</sup>	Master Mason: Daily Wage in d. groot Flemish	Kilograms Bought With Daily Wage	Quantity Index 1501-05 = 100	Price Relatives: 1501-05 = 100	Brabant: Basket of Consumables Value in d. groot Flemish	CPI Index Mean: 1501-05 =100
1	9	10	11	12	13	14	15	16
1501-05	18.703	27.462	8.333	1.973	100.000	100.000	194.47	100.000
1506-10	17.036	25.015	8.333	1.797	91.088	109.784	177.96	91.512
1511-15	16.864	24.762	9.333	1.986	90.169	110.903	213.77	109.928
1516-20	15.703	23.057	10.000	1.988	83.960	119.105	232.93	119.781
1521-25	14.093	20.963	10.267	1.810	74.410	134.391	278.93	143.435
1526-30	14.193	21.112	10.600	1.880	74.940	133.440	276.73	142.304
1531-35	14.679	21.835	10.067	1.847	77.505	129.023	269.72	138.697
1536-40	14.053	20.904	12.133	2.124	74.201	134.769	287.77	147.981

**Notes on coinage values:** see notes for Table 6A

**Source:** Van der Wee, Herman, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 16, pp. 249-52.

**Table 6.J The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

<b>Prices of Woollen Cloths from the Low Countries  in Pounds Groot Flemish  Cloths of 30 ells = 21.0 metres in length</b>						
<b>Years</b>	<b>Ghent Dickedinnen in £ groot Fl.</b>	<b>Ghent Strijpte Laken in £ groot Fl.</b>	<b>Mechelen Rooslaken in £ groot Fl.</b>	<b>Basket of Consumables Value in d. gr. Flem</b>	<b>Index 1501-05=100</b>	<b>Mason's Daily Wage in d. gr. Flem</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>1501-05</b>	14.667	11.100	9.967	194.467	100.000	8.333
<b>1506-10</b>	14.130	11.701	10.000	177.960	91.512	8.333
<b>1511-15</b>	13.000	12.750	10.933	213.773	109.928	9.333
<b>1516-20</b>	13.143	13.500	11.200	232.933	119.781	10.000
<b>1521-25</b>	13.225	13.550	11.200	278.933	143.435	10.267
<b>1526-30</b>	13.580	13.833	11.333	276.733	142.304	10.600
<b>1531-35</b>	13.760	14.320	11.067	269.720	138.697	10.067
<b>1536-40</b>	13.950	14.440	11.067	287.773	147.981	12.133

**Table 6.J The Purchasing Power of Coinages and Wages in the Low Countries, 1501 - 40**

<b>Prices of Woollen Cloths from the Low Countries in Pounds Groot Flemish Cloths of 30 ells = 21.0 metres in length</b>						
<b>Years</b>	<b>No. of Days' Wages of Master Mason to Buy:</b>			<b>Value of Woollens in Commodity Baskets:</b>		
	<b>1 Ghent Dickedinnen</b>	<b>1 Ghent Strijpte Laken</b>	<b>1 Mechelen Rooslaken</b>	<b>Ghent Dickedinnen</b>	<b>Ghent Strijpte Laken</b>	<b>Mechelen Rooslaken</b>
<b>1</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
<b>1501-05</b>	422.410	319.680	287.040	18.101	13.699	12.300
<b>1506-10</b>	406.950	336.979	288.000	19.056	15.780	13.486
<b>1511-15</b>	334.286	327.857	281.143	14.595	14.314	12.275
<b>1516-20</b>	315.438	324.000	268.800	13.542	13.910	11.540
<b>1521-25</b>	309.156	316.753	261.818	11.379	11.659	9.637
<b>1526-30</b>	307.472	313.208	256.604	11.777	11.997	9.829
<b>1531-35</b>	328.053	341.404	263.841	12.244	12.742	9.847
<b>1536-40</b>	275.934	285.626	218.901	11.634	12.043	9.229

**Sources:**

Stadsarchief Gent, Stadsrekeningen, 1499/1500 - 1539/40; Stadsarchief Mechelen, Stadsrekeningen M. 175 - 215; Algemeen Rijksarchief België, Rekenkamer, reg. nos. 41,280-85.

John Munro, 'Mint Outputs, Money, and Prices in Late-Medieval England and the Low Countries,' in Eddy Van Cauwenberghe and Franz Irsigler, eds., *Münzprägung, Geldumlauf und Wechselkurse/ Minting, Monetary Circulation and Exchange Rates*, Trierer Historische Forschungen, 7: *Akten des 8th International Economic History Congress, Section C-7, Budapest 1982* (Trier: University Press, 1984), pp. 31-122; Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 39: Synoptic Tables, pp. 46-61.

**Table 6.K Prices of Hondschoote Says and Ghent Dickedinnen Woollens, compared with the Purchasing Power an Antwerp Master Mason's Daily Wages**

<b>Year</b>	<b>Hondschoote Single Says: Prices in £ groot Flemish</b>	<b>Hondschoote Double Says: Prices in £ groot Flemish</b>	<b>Ghent Dickedinnen Woollens: Prices in £ groot Flemish</b>	<b>Daily Wage of an Antwerp Master Mason in d. groot Flemish</b>	<b>No. Days' Wages of a Master Mason to Buy a Single Say</b>	<b>No. Days' Wages of a Master Mason to Buy a Dickedinnen</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>1535</b>			14.150	10.333		328.656
<b>1536</b>			14.250	11.000		310.909
<b>1537</b>			14.500	11.667		298.277
<b>1538</b>	0.967	2.278	14.500	12.667	18.322	274.730
<b>1539</b>	0.945	2.184	15.000	12.667	17.905	284.203
<b>1540</b>	0.835	1.961	15.000	12.667	15.821	284.203
<b>1541</b>	0.879	2.015	15.500	12.667	16.654	293.676
<b>1542</b>	0.838	2.005	14.500	12.667	15.877	274.730
<b>1543</b>	0.783	1.775	14.000	14.000	13.423	240.000
<b>1544</b>	0.908	1.942	14.000	14.000	15.566	240.000

**Table 6.K Prices of Hondschoote Says and Ghent  
Dickedinnen Woollens, compared  
with the Purchasing Power an Antwerp Master  
Mason's Daily Wages**

<b>Year</b>	<b>Value of the Brabant Basket of Consumables in d. groot Flemish</b>	<b>Value of Single Say in Baskets of Consumables</b>	<b>Value of Ghent Dickedinnen in Baskets of Consumables</b>
<b>1</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>1535</b>	268.733		12.637
<b>1536</b>	297.467		11.497
<b>1537</b>	254.333		13.683
<b>1538</b>	295.533	0.785	11.775
<b>1539</b>	300.400	0.755	11.984
<b>1540</b>	291.133	0.688	12.365
<b>1541</b>	278.000	0.759	13.381
<b>1542</b>	293.600	0.685	11.853
<b>1543</b>	324.200	0.580	10.364
<b>1544</b>	351.067	0.621	9.571

**Sources:**

Stadsarchief Gent, Stadsrekeningen 15334/45 - 1544/45, Reeks 400: nos. 46 - 52; Herman Van der Wee, *The Growth of the Antwerp Market and the European*



*Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, Appendix 39: Synoptic Table of Wages, pp. 457-68; Henri De Sagher, et al., eds. *Recueil de documents relatifs à l'histoire de l'industrie drapière en Flandre*, IIe partie: *le sud-ouest de la Flandre depuis l'époque bourguignonne*, 3 vols. (Brussels, 1951-66), vol. II, pp. 342-46; no. 287, pp. 356-60 (30 April 1534); Florence Edler, 'Le commerce d'exportation des sayes d'Hondschoote vers Italie d'après la correspondance d'une firme anversoise, entre 1538 et 1544,' *Revue du Nord*, 22 (1936), 249-65.

Table 7

**The Dimensions and Compositions of Selected Woollens and Says  
in the 16th Century: England and the southern Low Countries**

<b>Drapery: City/Region</b>	<b>ESSEX/SUSSEX</b>	<b>GHENT</b>	<b>MECHELEN</b>	<b>HONDSCHOOTE</b>	<b>BERGUES-ST.WINOC</b>	<b>ESSEX</b>
<b>Date of Ordinance</b>	1552	1546	1544	1571	1537	1579
<b>Name of Textile</b>	Short Broadcloth	Dickedinnen	Gulden Aeren	Double Say	Narrow Say	Says:
<b>Additional Names</b>	Suffolk, Essex	Five Seals	Five Seals	Small	Fine	broad
<b>Origin of Wools</b>	England	England	England: Herefords.	Flanders, Friesland	Flanders, Artois	English:
<b>Wool Types</b>	short-stapled	March, Cotswolds	Lemster Ore	Scotland, Pomerania	long-stapled	long-stapled
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Length on Loom: ells/yds</b>	n.s.	42.500	48.000	40.000	n.s.	n.s.
<b>Length on Loom: metres</b>	n.s.	29.750	33.072	28.000	n.s.	n.s.
<b>Width on Loom: ells</b>	n.s.	3.625	4.000	1.438	n.s.	n.s.
<b>Width on Loom: metres</b>	n.s.	2.538	2.756	1.006	n.s.	n.s.
<b>Weight on Loom: lb.</b>	n.s.	88.000	n.s.	n.s.	n.s.	n.s.
<b>Weight on Loom: kg.</b>	n.s.	38.179	n.s.	n.s.	n.s.	n.s.
<b>Final Length: ells/yds</b>	24.000	30.000	30.000	36.750	40.000	10.000
<b>Final Length : metres</b>	22.555	21.000	20.670	25.725	28.000	9.398
<b>Final Width: ells/yds</b>	1.750	2.375	2.500	1.250	1.000	1.000
<b>Final Width: metres</b>	1.645	1.663	1.723	0.875	0.700	0.940
<b>No. of Warps</b>	n.s.	2066.000	3120.000	1800.000	1400.000	n.s.
<b>Warps per cm (fulled)</b>	n.s.	12.427	18.113	20.571	20.000	n.s.
<b>Area in m2</b>	37.095	34.913	35.604	22.509	19.600	8.833
<b>Final Weight in lb.</b>	64.000	51.000	58.000	16.000	11.000	2.750
<b>Final Weight in kg</b>	29.030	22.126	27.217	7.257	5.103	1.247
<b>Weight per m2 in grams</b>	782.575	633.766	764.421	322.421	260.352	141.193

**Sources:**

**Ghent:** M.J. Lameere, H. Simont, et al, eds., *Recueil des ordonnances des Pays Bas*, deuxième série, Vol. V: 1506 - 1706 (Brussels, 1910), pp. 272-83;

**England, woollens:** T. E. Tomlins, J. Raithby, eds., *The Statutes of the Realm*, 6 vols., Record Commission (London, 1810-22), vol. IV:1, 136-37 (statute 5-6 Edward VI, c.6);

**England, worsted says:** J.E. Pilgrim, 'The Rise of the 'New Draperies' in Essex,' *University of Birmingham Historical Journal*, 7 (1959-60), 36-59; A.P. Usher, *The Industrial History of England* (Boston, 1920), p. 200;

**Mechelen:** G. M. Willemsen, ed., 'Le règlement général de la draperie malinoise de 1544', *Bulletin du cercle archéologique de Malines*, 20 (1910), 156-90.

**Hondschoote:** Henri De Sagher, et al., eds. *Recueil de documents relatifs à l'histoire de l'industrie drapière en Flandre, IIe partie: le sud-ouest de la Flandre depuis l'époque bourguignonne*, 3 vols. (Brussels, 1951-66), vol. II, no. 290, pp. 362-69; no. 291, pp. 378-81; no. 299, p. 415.

**Bergues-Saint-Winoc:** De Sagher, vol. I, no. 163, pp. 530-31; no. 165, pp. 56-67; nos. 176-77.

**Table 8**  
**Exports of English Woolsacks and Woollen Broadcloths and**  
**Indices of Output in the Flemish and Brabantine Textile Industries**  
**in Five-Year Means, 1501-05 to 1536-40**

<b>Year</b>	<b>Total English Wool Exports in Sacks</b>	<b>Equivalent No. of Broadcloths</b>	<b>Total English Broadcloth Exports</b>	<b>Total London Exports</b>	<b>London Exports as Per Cent of Total</b>	<b>Ghent Drapery Excise Tax Farms in d groot</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>1501-05</b>	7,806.80	33,829.44	77,270.80	46,610.80	60.32%	132.00
<b>1506-10</b>	7,326.20	31,746.84	84,802.60	52,390.40	61.78%	93.60
<b>1511-15</b>	7,087.20	30,711.18	86,592.00	62,257.00	71.90%	97.20
<b>1516-20</b>	8,194.40	35,509.04	90,098.80	63,084.00	70.02%	62.40
<b>1521-25</b>	5,131.60	22,236.92	82,268.80	61,854.40	75.19%	
<b>1526-30</b>	4,834.80	20,950.78	93,534.40	72,350.00	77.35%	
<b>1531-35</b>	3,005.20	13,022.52	94,086.80	75,502.60	80.25%	
<b>1536-40</b>	3,951.40	17,122.72	109,278.00	91,730.60	83.94%	

a one English woolsack = 364 lb. = 165.1076 kg = 4.333 woollen broadcloths

b one English broadcloth = 3 kerseys = 4 straits or dozens: 24.0 by 1.75 yards = 21.947 m by 1.600 m

c Ghent: the sum of the Ramen (Tentering Frames) and Nieuw Huusgeld in de Ramen Excises, which are the only ones indisputably measuring cloth production. The pond or livre de paiement was worth 6d. groot Flemish; and thus £1 groot Flemish = £40 paiement

**Table 8** Exports of English Woolsacks and Woollen Broadcloths and Indices of Output in the Flemish and Brabantine Textile Industries in Five-Year Means, 1501-05 to 1536-40

Year	Mechelen Drapery Tax Excise Farms in £ groot	Mechelen Cloths in Clergiegeld Tax	Leiden Cloth Outputs	Hondschoote Say Outputs in 8d. tax	Hondschoote Say Sales
1	8	9	10	11	12
1501-05	224.30	2,155.05	25,148.20	17,640.00	
1506-10	224.33	1,912.00	23,782.80	20,016.00	
1511-15	185.16	1,796.00	24,673.20	22,728.00	
1516-20	190.05	2,394.00	26,244.90	29,400.00	
1521-25	181.21	2,307.00	24,334.60	32,148.00	
1526-30	143.71	2,402.00	23,094.20	34,896.00	31,583.44
1531-35	127.51	2,594.00	17,257.60	43,584.00	41,184.50
1536-40	94.97	1,660.00	16,646.20	43,176.00	42,761.40

d Mechelen: Total of the Wolle, Rocghewande, and Ghereede Ghewande Excise-Tax Farms.

#### Sources:

**England:** E. M. Carus-Wilson and Olive Coleman, eds., *England's Export Trade, 1275-1547* (Oxford, 1963), pp. 36-119; Anthony R. Bridbury, *Medieval English Clothmaking: An Economic Survey* (London, 1982), Appendix F, pp. 118-22.

**Ghent:** Stadsarchief Gent, Stadsrekeningen, Reeks 400:4-43:1316-1520, Algemeen Rijksarchief België, Rekenkamer, reg. nos. 38,635-72.

**Mechelen:** Stadsarchief Mechelen, Stadsrekeningen, Series I: 3-225 (1316-1550); Algemeen Rijksarchief België, Rekenkamer, reg. nos. 41,219-85; Raymond Van Uytven, 'De Omvang van de Mechelse lakenproductie vanaf de 14e tot de 16e eeuw', *Noordgouw: Cultureel tijdschrift van de Provincie Antwerpen*, 5:3 (1965), 1-22.

**Leiden:** Nicholas W. Posthumus, ed., *Bronnen tot de geschiedenis van de leidsche textielnijverheid, 1333-1795*, 3 vols. (The Hague, 1910-1922), Vol. II, pp. 317-20; Nicholas W. Posthumus, *Geschiedenis van de Leidsche lakenindustrie*, 3 vols. (The Hague, 1908-1939), Vol. I: *De Middeleeuwen, veertiende tot zestiende eeuw*, pp. 370-425.

**Hondschoote:** Emile Coornaert, *La draperie-sayerterie d'Hondschoote, XIVe-XVIIIe siècles* (Paris, 1930), calculated from Appendix IV, pp. 485-90.

Table 9

**The International Commerce of the Brabant Fairs, c. 1560:  
Estimated Values of Imports and Exports in pounds groot Flemish**

IMPORTS			EXPORTS			
Commodity	Value in £ groot Flemish	Percent of Estimated Total	4	Commodity	Value in £ groot Flemish	Percent of Total
<b>Textile Products</b>				<b>Textile Products</b>		
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Silks: Italian fabrics and raw	666,667	17.78%		Says, worsteds, serges	416,667	15.63%
Woollens: English	540,000	14.40%		Linens	416,667	15.63%
Fustians: German	40,000	1.07%		Woollens: Netherlander	233,333	8.75%
Wools: Spanish*	208,333	5.56%		Woollens: English (finished)	520,000	19.50%
Wools: English	83,333	2.22%		Fustians: German	40,000	1.50%
Woad: French	66,667	1.78%		Silks: re-exports	83,333	3.13%
Alum: Italian	23,333	0.62%		Tapestries	116,667	4.38%
Alum: Spanish	16,667	0.44%		Other Textile Exports	100,000	3.75%
Cochineal: Spanish-American	37,500	1.00%				
<b>Sub-total textile products</b>	1,682,500	44.87%		<b>Sub-total textile products</b>	1,926,667	72.25%
<b>Foodstuffs</b>				<b>Other Exports</b>	740,000	27.75%
Grains: Baltic	500,000	13.33%				
Spices: Portuguese-Asian	333,333	8.89%				
Sugar: Portuguese	41,667	1.11%				
Wines: French	191,667	5.11%				
Wines: Rhenish	120,000	3.20%				
Wines: Italian	41,667	1.11%				
Wines: Spanish & Portuguese	41,667	1.11%				
Salt: French	41,667	1.11%				
Salt: Spanish	29,167	0.78%				
Olive Oil: Spanish & Portuguese	33,333	0.89%				
<b>Sub-total foodstuffs</b>	1,374,167	36.64%				
Copper: German	26,667	0.71%				

Column 1	2	3	4	5	6	7
<b>Other Commodities: estimated</b>	666,667	17.78%				
<b>Total Values of Commodities</b>	<b>3,750,000</b>	100.00%			<b>2,666,667</b>	100.00%

**Sources:**

Wilfrid Brulez, 'Le commerce international des Pays-Bas au XVIe siècle: essai d'appréciation quantitative,' *Revue belge de philologie et d'histoire*, 46 (1968), 1205-21, reissued in English translation as: 'The Balance of Trade in the Netherlands in the Middle of the Sixteenth Century', *Acta Historiae Neerlandica*, 4 (1970), 20-48. Based upon Ludovico Guicciardini, *Description de la cité d'Anvers, 1560*, trans. François de Belleforest, 1582; published in Antwerp, 1920); Jan De Vries, and Ad Van der Woude, *The First Modern Economy: Success, Failure, and Perseverance of the Dutch Economy, 1500 - 1815* (Cambridge, 1996).



**Table 10.A The Phelps Brown and Hopkins 'Basket of Consumables' Index  
Components and their Weights for 1500**

<b>Commodity Groups</b>	<b>Commodity</b>	<b>units Imperial</b>	<b>Quantity Imperial</b>	<b>Quantity Metric</b>	<b>units Metric</b>	<b>Weights in %</b>	<b>Cost in 1500 in d.</b>	
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
<b>Farinaceous</b>	wheat	bushels	1.250	45.461	litres	20.00	20.80	
	rye	bushels	1.000	36.369	litres			
	barley	bushels	0.500	18.184	litres			
	peas	bushels	0.667	24.243	litres			
<b>Meat, Fish</b>	sheep	number	1.500	1.500	number	37.50	39.00	
	white herrings	number	15.000	15.000	number	[25.00]		
	red herrings	number	25.000	25.000	number			
<b>Butter &amp; Cheese</b>	cheese	nil				[12.50]	0.00	
	butter	nil						
<b>Drink</b>	malt	bushels	4.500	163.659	litres	22.50	23.40	
<b>Fuel, Light</b>	charcoal	bushels	4.250	154.567	litres	7.50	7.80	
	candles	lb avoirdupois	2.750	1.247379	kg			
	oil	pint	0.500	0.284131	litres			
<b>Textiles</b>	canvas	yards	0.667	0.609594	metres	12.50	13.00	
	shirting	yards	0.500	0.457200	metres			
	woollen cloth	yards	0.333	0.304800	metres			
<b>Total</b>						100.00	104.00	

**Notes:** 1 cwt [hundredweight] = 112 lb.  
1 quarter = 8 bushels



**Table 10.B**                      **The Phelps Brown and Hopkins Price and Indices for England, 1501-05: in terms of the base: 1451-75 = 100**

<b>Year</b>	<b>Composite Price Index</b>	<b>Nominal Day Wage in d. for a Master</b>	<b>Nominal Wage Index 1451-75=100 [= 6d. daily]</b>	<b>Nominal Day Wage in d. for a Labourer</b>	<b>Nominal Wage Index 1451-75=100 [= 4d. daily]</b>	<b>Real Wage Index Master 1451-75=100</b>	<b>Real Wage Index Labourer 1451-75=100</b>
<b>1</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>
<b>1501</b>	102.28	6.00	100.00	4.00	100.00	97.77	97.77
<b>1502</b>	111.76	6.00	100.00	4.00	100.00	89.48	89.48
<b>1503</b>	109.27	6.00	100.00	4.00	100.00	91.52	91.52
<b>1504</b>	107.50	6.00	100.00	4.00	100.00	93.02	93.02
<b>1505</b>	103.15	6.00	100.00	4.00	100.00	96.95	96.95
<b>1501-05</b> [1451-75 base]	106.79	6.00	100.00	4.00	100.00	93.75	93.75
<b>1501-05</b>	100.00	100.00	100.00	100.00	100.00	100.00	100.00

**Sources:** E. Henry Phelps Brown and Sheila V. Hopkins, 'Seven Centuries of Building Wages,' *Economica*, 22 (August 1955), reprinted in E.M. Carus-Wilson, ed., *Essays in Economic History*, vol. II (London, 1962), 168-78; and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 1-13; E.H. Phelps Brown and S.V. Hopkins, 'Seven Centuries of the Prices of Consumables Compared with Builders' Wage-Rates,' *Economica*, 23 (Nov. 1956), reprinted in E. M. Carus-Wilson, ed., *Essays in Economic History*, vol. II (London, 1962), pp. 179-96 and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 13-59, containing additional statistical appendices not provided in the original publication.

Table 11.A The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Bordeaux Red Wine (Claret)									
By the dozen gallons: 1 gallon = 4.546090 dm <sup>3</sup> [cubic decimetres] or litres									
Year Mean	Price per litre in pence	No. litres per pence 1d.	No. litres per Angel-noble <sup>a</sup>	No. litres per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. litres Purchased by Daily Wage	Quantity Index 1501-05 = 100	Wine Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	1.730	0.578	46.231		6.00	3.467	100.000	100.000	100.00
1506-10	1.758	0.569	45.508		6.00	3.413	98.436	101.589	97.17
1511-15	1.848	0.541	43.296		6.00	3.247	93.651	106.780	101.62
1516-20	1.784	0.561	44.854		6.00	3.364	97.020	103.072	112.78
1521-25	2.830	0.353	28.266		6.00	2.120	61.140	163.559	136.76
1526-30	2.427	0.412	37.083	24.722	6.00	2.472	71.299	140.253	147.34
1531-35	2.321	0.431	38.782	25.855	6.00	2.585	74.566	134.110	145.74
1536-40	2.464	0.406	36.531	24.354	6.50	2.638	70.238	142.373	142.64

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: 1401-1582 (1882), pp. 684-86.

Table 11.B

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Herrings: Smoked North Sea Red Herrings  
by the cade of 500 fish

Year Mean	Herring: Price per fish in d. st.	Herring: No. of fish per 1d sterling	Herring: No. of fish per angel-noble <sup>a</sup>	Herring: No. of fish per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. Herrings Purchased by Daily Wage	Quantity Index 1501-05 = 100	Herrings Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	0.139	7.218	577.439		6.00	43.308	100.000	100.000	100.00
1506-10	0.140	7.141	571.312		6.00	42.848	98.939	101.072	97.17
1511-15	0.150	6.671	533.689		6.00	40.027	92.424	108.198	101.62
1516-20	0.141	7.077	566.171		6.00	42.463	98.049	101.990	112.78
1521-25	0.154	6.500	519.963		6.00	38.997	90.046	111.054	136.76
1526-30	0.157	6.361	559.789	381.679	6.00	38.168	88.132	113.467	147.34
1531-35	0.159	6.309	567.823	378.549	6.00	37.855	87.409	114.405	145.74
1536-40	0.170	5.872	528.479	352.319	6.50	38.168	81.352	122.922	142.64

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: 1401-1582 (1882), pp. 608-10.

Table 11.C

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Cod fish: from the Orkney Islands and Iceland, priced by the 100

Year	Cod: Price per Fish in d. st.	Cod: no. of fish per 1d. sterling	Cod: no. of fish per angel-noble <sup>a</sup>	Cod: no. of fish per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	Cod: no. Purchased by Daily Wage	Quantity Index 1501-05 = 100	Cod Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	3.946	0.253	20.274		6.00	1.521	100.000	100.000	100.00
1506-10	2.736	0.365	29.240		6.00	2.193	144.225	69.336	97.17
1511-15	5.008	0.200	15.974		6.00	1.198	78.794	126.913	101.62
1516-20	6.552	0.153	12.210		6.00	0.916	60.226	166.042	112.78
1521-25	6.080	0.164	13.158		6.00	0.987	64.901	154.080	136.76
1526-30	7.920	0.126	11.364	7.576	6.00	0.758	49.823	200.710	147.34
1531-35	5.832	0.171	15.432	10.288	6.00	1.029	67.661	147.795	145.74
1536-40	4.878	0.205	18.450	12.300	6.50	1.333	80.894	123.619	142.64

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: 1401-1582 (1882), pp. 542-44.

Table 11.D

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

## Wheat in the Oxford- Cambridge regions

1 quarter of grain = 8 bushels = one-quarter hundredweight (cwt) = 28 lb. = 64 gallons = 290.93504 litres

1 bushel = 1/8 imperial quarter = 8 gallons = 36.36872 litres [cubic decimetres]

Year Mean	Wheat: Price per litre in d. st.	Wheat: No. litres per 1 d. st.	Wheat: No. litres per angel-noble <sup>a</sup>	Wheat: No. litres per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. of Litres Purchased by Daily Wage	Quantity Index 1501-05 = 100	Wheat Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	0.270	3.709	296.698		6.00	22.252	100.000	100.000	100.00
1506-10	0.180	5.558	444.622		6.00	33.347	149.857	66.730	97.17
1511-15	0.272	3.674	293.889		6.00	22.042	99.053	100.956	101.62
1516-20	0.282	3.544	283.508		6.00	21.263	95.554	104.653	112.78
1521-25	0.246	4.072	325.766		6.00	24.432	109.797	91.077	136.76
1526-30	0.373	2.680	241.230	160.820	6.00	16.082	72.271	138.368	147.34
1531-35	0.340	2.945	265.035	176.690	6.00	17.669	79.403	125.940	145.74
1536-40	0.297	3.369	303.248	202.165	6.50	21.901	90.851	110.070	142.64

## Notes:

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: *1401-1582* (1882), pp. 286-88.

Table 11.E

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Peas: Priced by the Quarter = 8 bushels = 64 gallons = 290.93504 litres  
 1 bushel = 1/8 imperial quarter = 8 gallons = 36.36688 litres

Year	Peas: Price per litre in d. st.	Peas: No. litres per 1 d. st.	Peas: No. litres per angel-noble <sup>a</sup>	Peas: No. litres per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. Litres Purchased by Daily Wage	Quantity Index 1501-05 = 100	Peas Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	0.149	6.711	536.904		6.00	40.268	100.000	100.000	100.00
1506-10	0.161	6.223	497.857		6.00	37.339	92.727	107.843	97.17
1511-15	0.224	4.462	356.976		6.00	26.773	66.488	150.404	101.62
1516-20	0.182	5.505	440.435		6.00	33.033	82.032	121.903	112.78
1521-25	0.136	7.332	586.563		6.00	43.992	109.249	91.534	136.76
1526-30	0.257	3.895	350.524	233.683	6.00	23.368	58.032	172.318	147.34
1531-35	0.251	3.991	359.179	239.453	6.00	23.945	59.465	168.166	145.74
1536-40	0.213	4.693	422.325	281.550	6.50	30.501	69.919	143.022	142.64

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: 1401-1582 (1882), pp. 287-89.



Table 11.F

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

## Loaf Sugar: Priced by the dozen pounds, the pound, and the kilogram

12 lb. = 5443.116 grams = 5.443 kg.  
1 pound avoirdupois = 453.593 grams

Year	Sugar: Price per kg in d. sterling	Sugar: No. kg per 1 d. sterling	Sugar: No. kg per angel-noble <sup>a</sup>	Sugar: No. kg per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. of kg. Purchased by Daily Wage	Quantity Index 1501-05 = 100	Sugar Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	6.393	0.156	12.513		6.00	0.938	100.000	100.000	100.00
1506-10	7.937	0.126	10.080		6.00	0.756	80.556	124.138	97.17
1511-15	12.346	0.081	6.480		6.00	0.486	51.786	193.103	101.62
1516-20	14.661	0.068	5.457		6.00	0.409	43.609	229.310	112.78
1521-25	13.001	0.077	6.153		6.00	0.461	49.176	203.352	136.76
1526-30	15.714	0.064	5.727	3.818	6.00	0.382	40.686	245.785	147.34
1531-35	16.039	0.062	5.611	3.741	6.00	0.374	39.863	250.862	145.74
1536-40	16.755	0.060	5.371	3.581	6.50	0.388	38.158	262.069	142.64

## Notes:

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: *1401-1582* (1882), pp. 685-87.

Table 11.G

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Tallow Candles: English and French tallow candles, made from mutton fat,  
purchased at Cambridge and Oxford by the dozen lb.

1 pound avoirdupois = 453.59237 grams

Year	Candles: Price per kg in d. sterling	Candles: No. kg per 1 d. sterling	Candles: No. kg per angel-noble <sup>a</sup>	Candles: No. kg per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. of kg. Purchased by Daily Wage	Quantity Index 1501-05 = 100	Candles Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	2.462	0.406	32.496		6.00	2.437	100.000	100.000	100.00
1506-10	2.370	0.422	33.756		6.00	2.532	103.876	96.269	97.17
1511-15	2.563	0.390	31.215		6.00	2.341	96.057	104.104	101.62
1516-20	2.728	0.367	29.323		6.00	2.199	90.236	110.821	112.78
1521-25	2.618	0.382	30.558		6.00	2.292	94.035	106.343	136.76
1526-30	2.627	0.381	34.257	22.838	6.00	2.284	93.706	106.716	147.34
1531-35	3.096	0.323	29.073	19.382	6.00	1.938	79.525	125.746	145.74
1536-40	2.903	0.345	31.005	20.670	6.50	2.239	84.810	117.910	142.64

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: 1401-1582 (1882), pp. 378-80.

Table 11.H

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Paper: Good quality linen paper, probably imported from the Low Countries

Purchased at Cambridge and Oxford by the ream: 1 ream = 20 quires = 480 sheets\*

Year	Paper: Price per sheet in d. sterling	Paper: No. of Sheets per 1 d. st.	Paper: No. of Sheets per angel-noble <sup>a</sup>	Paper: No. of Sheets per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. of Sheets Purchased by Daily Wage	Quantity Index 1501-05 = 100	Paper Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
Column 1	2	3	4	5	6	7	8	9	10
1501-05	0.079	12.698	1015.873		6.00	76.190	100.000	100.000	100.00
1506-10	0.069	14.436	1154.887		6.00	86.617	113.684	87.963	97.17
1511-15	0.064	15.534	1242.718		6.00	93.204	122.330	81.746	101.62
1516-20	0.057	17.647	1411.765		6.00	105.882	138.971	71.958	112.78
1521-25	0.080	12.565	1005.236		6.00	75.393	98.953	101.058	136.76
1526-30	0.071	14.035	1263.158	842.105	6.00	84.211	110.526	90.476	147.34
1531-35	0.085	11.794	1061.425	707.617	6.00	70.762	92.875	107.672	145.74
1536-40	0.098	10.213	919.149	612.766	6.50	66.383	80.426	124.339	142.64

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: 1401-1582 (1882), p. 605.

**Table 11.1 The Purchasing Power of Coinage and Wages in England, 1501 - 1540**

**Linen: Table Linen, medium to good quality, with a width of 1.0 to 1.5 yards (ells)  
Most Imported from the Low Countries  
Priced by the dozen ells (= yards): 1 yard = 0.9144 metre**

Year	Linen: Price Dozen Ells in shillings	Linen: Price per metre in d. sterling	Linen: No. of Metres per 1 d. st.	Linen: No. of Metres per angel-noble <sup>a</sup>	Linen: No. of Metres per crown <sup>b</sup>
Column 1	2	3	4	5	6
1501-05	7.225	7.901	0.127	10.125	
1506-10	6.733	7.364	0.136	10.864	
1511-15	7.550	8.257	0.121	9.689	
1516-20	7.125	7.792	0.128	10.267	
1521-25	8.000	8.749	0.114	9.144	
1526-30	7.275	7.956	0.126	11.312	7.541
1531-35	8.638	9.446	0.106	9.528	6.352
1536-40	7.575	8.284	0.121	10.864	7.243

**Table 11.1 The Purchasing Power of Coinage and Wages in England, 1501 - 1540**

**Linen: Table Linen, medium to good quality, with a width of 1.0 to 1.5 yards  
(ells)  
Most Imported from the Low Countries  
Priced by the dozen ells (= yards): 1 yard = 0.9144 metre**

Year	Wage of a Master Mason in d. sterling	Purchased by Daily Wage	Wages for Mason to Buy 24 ells/yards	Index 1501-05 = 100	Price Index 1501-5 = 100	PBH CPIndex 1501-5 = 100
1	7	8	9	10	11	12
1501-05	6.00	0.759	28.900	100.000	100.000	100.00
1506-10	6.00	0.815	26.933	107.302	93.195	97.17
1511-15	6.00	0.727	30.200	95.695	104.498	101.62
1516-20	6.00	0.770	28.500	101.404	98.616	112.78
1521-25	6.00	0.686	32.000	90.313	110.727	136.76
1526-30	6.00	0.754	29.100	99.313	100.692	147.34
1531-35	6.00	0.635	34.550	83.647	119.550	145.74
1536-40	6.50	0.785	27.969	95.380	104.844	142.64

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: *1401-1582* (1882), pp. 586-88.

Table 11.J

## The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Woollen Cloth, First Quality: sold by the pannus of 24 yards

Priced by the pannus of 24 yards (ells), the yard, and the metre  
1 Yard = 0.9144 metre 1 metre = 1.0936133 yards

Year	Woollens: Price per Piece in £ sterling	Woollens: Price per Metre in d. sterling	Woollens: No. of Metres per 1d. sterling	Woollens: No. of Metres per angel-noble <sup>a</sup>	Woollens: No. of Metres per crown <sup>b</sup>	Nominal Daily Wage of a Master Mason in d. sterling	No. of Metres Purchased by Daily Wage
Column 1	2	3	4	5	6	7	8
1501-05	3.243	35.460	0.028	2.256		6.00	0.169
1506-10	3.578	39.133	0.026	2.044		6.00	0.153
1511-15	3.940	43.088	0.023	1.857		6.00	0.139
1516-20	4.053	44.328	0.023	1.805		6.00	0.135
1521-25	3.200	34.996	0.029	2.286		6.00	0.171
1526-30	4.820	52.712	0.019	1.707	1.138	6.00	0.114
1531-35	3.373	36.891	0.027	2.440	1.626	6.00	0.163
1536-40	4.560	49.869	0.020	1.805	1.203	6.50	0.130

Table 11.J The Purchasing Power of Coinage and Wages in England, 1501 - 1540

Woollen Cloth, First Quality: sold by the pannus of 24 yards

Priced by the pannus of 24 yards (ells), the yard, and the metre  
1 Yard = 0.9144 metre 1 metre = 1.0936133 yards

Year	No. of Metres Purchased by Daily Wage	No. of Metres Purchased by Weekly Wage	Number of Days's Wages for a Master Mason to Purchase One Woollen	Quantity Index 1501-05 = 100	Woollens Price Index 1501-05 = 100	PBH CPI Index 1501-05 = 100
1	9	10	11	12	13	14
1501-05	0.169	1.015	129.700	100.000	100.000	100.000
1506-10	0.153	0.920	143.133	90.615	110.357	97.172
1511-15	0.139	0.835	157.600	82.297	121.511	101.618
1516-20	0.135	0.812	162.133	79.996	125.006	112.777
1521-25	0.171	1.029	128.000	101.328	98.689	136.756
1526-30	0.114	0.683	192.800	67.272	148.651	147.337
1531-35	0.163	0.976	134.933	96.122	104.035	145.741
1536-40	0.130	0.782	168.369	71.107	140.632	142.641

**Notes:**

**a** Angel-noble: 5.157 g. fine gold: from 1464 to 1526 valued at 6s 8d or 80d and 7s 6d or 90d thereafter

**b** Crown: 3.438 g. fine gold: struck from Nov. 1526 with a value of 5s 0d or 60d

**Source:** James E. Thorold Rogers, *History of Agriculture and Prices in England, from the Year after the Oxford Parliament (1259) to the Commencement of the Continental War (1793), Compiled Entirely From Original and Contemporaneous Records*, 7 vols. (Oxford, 1866-1902), vol. IV: 1401-1582 (1882), pp. 586-88.

Table 12

## Price and Wage Indices for Southern Brabant, 1501-05 to 1536-40

The Van der Wee Composite Price Index in deniers of the Brabant pond groot  
for the Antwerp-Lier-Brussels region, and Wage Indices for Antwerp Master Craftsmen

Index: mean 1501-05 = 100 (with comparison with 1451-75=100)

Years: Quin- quennium	Grains: Total Value in d. gr. Brabant	Grains: Price Index 1501-05 =100	Meat/Fish/Dairy: Total Value in d. gr. Brabant	Meat/Fish/Dairy: Price Index 1501-05 =100	Industrial Goods: Total Value in d. gr. Brabant	Industrial Goods: Price Index 1501-05 =100
Column 1	2	3	4	5	6	7
1501-05	111.760	100.000	107.740	100.000	72.200	100.000
1506-10	88.560	79.241	101.800	94.487	76.580	106.066
1511-15	120.960	108.232	114.360	106.144	85.340	118.199
1516-20	133.160	119.148	131.520	122.072	84.720	117.341
1521-25	177.360	158.697	147.740	137.126	93.300	129.224
1526-30	166.120	148.640	155.440	144.273	93.540	129.557
1531-35	170.080	152.183	162.800	151.105	71.700	99.307
1536-40	189.120	169.220	168.200	156.117	74.340	102.964



Table 12

## Price and Wage Indices for Southern Brabant, 1501-05 to 1536-40

The Van der Wee Composite Price Index in deniers of the Brabant pond groot for the Antwerp-Lier-Brussels region, and Wage Indices for Antwerp Master Craftsmen

Index: mean 1501-05 = 100 (with comparison with 1451-75=100)

Years: Quin- quennium	Basket of Goods: Total Value in d. groot Brabant	Basket of Goods: Total Value in d. groot Flemish	Brabant Price Index in Flemish d. groot 1451-75=100 232.524d Br 155.016d Fl.	Brabant Price Index in Flemish d. groot 1501-05 =100 291.700d Br 194.467d Fl	Antwerp Wages: Master M & C: Nominal Wage Index (Mean): 1501-5=100 12.250d gr. Br. 8.167d gr. Fl.	Antwerp Wages: Master M & C: Real Wage Index 1501-5=100 [NWI/CPI] adjusted pure average*
1	8	9	10	11	12	13
1501-05	291.700	194.467	125.449	100.000	100.000	100.000
1506-10	266.940	177.960	114.801	91.512	100.000	109.368
1511-15	320.660	213.773	137.904	109.928	109.796	99.689
1516-20	349.400	232.933	150.264	119.781	122.449	102.226
1521-25	418.400	278.933	179.938	143.435	124.082	87.733
1526-30	415.100	276.733	178.519	142.304	126.122	88.666
1531-35	404.580	269.720	173.995	138.697	122.857	89.469
1536-40	431.660	287.773	185.641	147.981	140.408	95.011

\* see text

**Source:** Herman Van der Wee, 'Prijzen en lonen als ontwikkelingsvariabelen: Een vergelijkend onderzoek tussen Engeland en de Zuidelijke Nederlanden, 1400 - 1700,' in *Album offert à Charles Verlinden à l'occasion de ses trente ans de professoriat* (Ghent, 1975), pp. 413-35; republished in English translation as: 'Prices and Wages as Development Variables: A Comparison between England and the Southern Netherlands, 1400-1700,' *Acta Historiae Neerlandicae*, 10 (1978), 58-78. Only the Dutch version, however, contains the specific annual data in tabular form.

Table 13

## The Purchasing Power of Daily Money Wages for Building Craftsmen in Brabant

Summer and Winter Wages for Antwerp Masons and Carpenters: in Five-Year Means, 1501-05 to 1536-40  
in d. groot Flemish and d. groot Brabant

Year	Master Mason: Daily Summer Wage in d. groot Flemish	Master Mason: Daily Summer Wage in d. groot Brabant	Master Carpenter Daily Summer Wage in d. groot Brabant	Master Craftsmen: Masons/Carpenters Summer Wages in d groot Brabant	Master Craftsmen: Masons/Carpenters Winter Wages in d groot Brabant	Winter Wage as percent of Summer	Mason's labourers d groot Brabant
Column 1	2	3	4	5	6	7	8
1501-05	8.333	12.500	12.000	12.250	9.000	73.47%	7.700
1506-10	8.333	12.500	12.000	12.250	9.000	73.47%	8.000
1511-15	9.333	14.000	12.900	13.450	9.600	71.46%	8.200
1516-20	10.000	15.000	15.000	15.000	10.500	70.00%	8.500
1521-25	10.267	15.400	15.000	15.200	11.250	73.99%	9.400
1526-30	10.600	15.900	15.000	15.450	11.700	75.81%	9.450
1531-35	10.067	15.100	15.000	15.050	12.000	79.74%	9.000
1536-40	12.133	18.200	16.200	17.200	12.000	69.92%	10.050
Mean	9.883	14.825	14.138	14.481	10.631	73.48%	8.788

Table 13

**The Purchasing Power of Daily Money Wages for Building Craftsmen in Brabant**

**Summer and Winter Wages for Antwerp Masons and Carpenters: in Five-Year Means, 1501-05 to 1536-40  
in d. groot Flemish and d. groot Brabant**

Year	Mason's labourers % of master wages	No. Days Employ- ment per year	Basket of Goods Total Value in d. gr. Brabant	Basket of Goods Total Value in d. gr. Flemish	Price Index 1501-05 =100 Flemish groot 194.467d Fl.	Mean Master Wage Index 1501-05 =100 NWI:	Mean Master Real Wage Ind 1501-05 =100 NWI/CPI adjusted*
1	9	10	11	12	13	14	15
<b>1501-05</b>	61.60%	212.800	291.700	194.467	100.000	100.000	100.000
<b>1506-10</b>	64.00%	215.200	266.940	177.960	91.512	100.000	109.368
<b>1511-15</b>	58.93%	214.600	320.660	213.773	109.928	109.796	99.689
<b>1516-20</b>	56.67%	226.600	349.400	232.933	119.781	122.449	102.226
<b>1521-25</b>	61.07%	226.400	418.400	278.933	143.435	124.082	87.733
<b>1526-30</b>	59.45%	216.400	415.100	276.733	142.304	126.122	88.666
<b>1531-35</b>	59.61%	206.000	404.580	269.720	138.697	122.857	89.469
<b>1536-40</b>	55.21%	219.200	431.660	287.773	147.981	140.408	95.011
<b>Mean</b>	59.57%	217.150	362.305	241.537	124.205	118.214	96.520

Table 13

**The Purchasing Power of Daily Money Wages for Building Craftsmen in Brabant**

**Summer and Winter Wages for Antwerp Masons and Carpenters: in Five-Year Means, 1501-05 to 1536-40  
in d. groot Flemish and d. groot Brabant**

Year	Master's Wage in Commodity Basket Units for 210 days earnings	Master's Wage in Commodity Basket Units for Index: 1501-05=100	Master's Wage in Commodity Basket Units for 217.15 days earnings	in Commodity Basket Units for S + W Wages for annual employment	in CB Units S + W Wages for annual employment 1501-5=100 (adjusted)
1	16	17	18	19	20
<b>1501-05</b>	8.819	100.000	9.119	8.212	100.000
<b>1506-10</b>	9.637	109.368	9.965	9.079	110.608
<b>1511-15</b>	8.781	99.689	9.080	8.204	99.793
<b>1516-20</b>	9.015	102.226	9.322	8.836	107.648
<b>1521-25</b>	7.623	87.733	7.883	7.560	93.602
<b>1526-30</b>	7.807	88.666	8.073	7.438	90.863
<b>1531-35</b>	7.811	89.469	8.077	7.197	88.318
<b>1536-40</b>	8.351	95.011	8.635	7.883	96.911
<b>Mean</b>	8.430	96.520	8.717	8.004	98.468

**Table 13 The Purchasing Power of Daily Money Wages for Building Craftsmen in Brabant**

**The Purchasing Power of Daily Money Wages for Building Craftsmen in Brabant  
Summer and Winter Wages for Antwerp Masons and Carpenters: in Five-Year Means, 1501-05 to 1536-40  
in d. groot Flemish and d. groot Brabant**

<b>Year</b>	<b>Brabant Price Index 1451-75=100 155.016d gr FI</b>	<b>Antwerp Mean Master Wage Index 1451-75=100</b>	<b>Antwerp Mean Master Real Wage Ind 1451-75=100</b>
<b>1</b>	<b>21</b>	<b>22</b>	<b>23</b>
<b>1501-05</b>	125.449	102.083	81.552
<b>1506-10</b>	114.801	102.083	89.192
<b>1511-15</b>	137.904	112.083	81.298
<b>1516-20</b>	150.264	125.000	83.368
<b>1521-25</b>	179.938	126.667	71.548
<b>1526-30</b>	178.519	128.750	72.309
<b>1531-35</b>	173.995	125.417	72.963
<b>1536-40</b>	185.641	143.333	77.484
<b>Mean</b>	155.814	120.677	78.714

**Sources:** Herman Van der Wee, 'Prijzen en lonen als ontwikkelingsvariabelen: Een vergelijkend onderzoek tussen Engeland en de Zuidelijke Nederlanden, 1400 - 1700,' in *Album offert à Charles Verlinden à l'occasion de ses trente ans de professoriat* (Ghent, 1975), pp. 413-35; republished in English translation as: 'Prices and Wages as Development Variables: A Comparison between England and the Southern Netherlands, 1400-1700,' *Acta Historiae Neerlandicae*, 10 (1978), 58-78; Herman Van der Wee, *The Growth of the Antwerp Market and the European Economy, Fourteenth-Sixteenth Centuries*, 3 vols. (The Hague, 1963), I: *Statistics*, section ii: Wages, pp. 333-34; 339-41, 457-61, Appendix 48, pp. 541-42.

Table 14

## The Phelps Brown and Hopkins Price Indices for Southern England

Mean 1501-05 = 100 (converted from 1451-75=100)

	<b>Farinaceous: WRB Grains, Peas</b>	<b>Meat &amp; Fish</b>	<b>Drink: Malt,</b>	<b>Fuel and Light</b>	<b>Textiles</b>	<b>Composite PB&amp;H Index</b>
<b>Weights</b>	<b>20.00</b>	<b>37.50</b>	<b>22.50</b>	<b>7.50</b>	<b>12.50</b>	<b>100.00</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Years</b>						
<b>1501-05</b>	100.00	100.00	100.00	100.00	100.00	100.00
<b>1506-10</b>	80.03	116.17	85.80	94.31	99.29	97.17
<b>1511-15</b>	91.82	116.00	87.69	102.84	104.79	101.62
<b>1516-20</b>	94.50	129.14	114.02	106.78	104.08	112.78
<b>1521-25</b>	106.76	178.71	128.79	104.81	110.82	136.76
<b>1526-30</b>	143.40	161.72	155.30	107.44	123.05	147.34
<b>1531-35</b>	127.04	168.07	155.68	107.66	123.23	145.74
<b>1536-40</b>	125.47	172.16	133.52	109.19	128.55	142.64

**Table 14                    The Phelps Brown and Hopkins Price Indices for Southern England**

Mean 1501-05 = 100 (converted from 1451-75=100)

	<b>Farinaceous [with drink]</b>	<b>Meat/Fish &amp; Dairy</b>	<b>Industrial</b>	<b>Composite PB&amp;H Index (Revised)</b>	<b>Composite PB&amp;H Index 1451-75=100</b>
<b>Weights</b>	<b>42.50</b>	<b>37.50</b>	<b>20.00</b>	<b>100.00</b>	<b>100.00</b>
<b>Columns</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>Years</b>					
<b>1501-05</b>	100.00	100.00	100.00	100.00	106.79
<b>1506-10</b>	82.82	116.17	97.66	97.17	103.77
<b>1511-15</b>	89.83	116.00	104.15	101.62	108.52
<b>1516-20</b>	103.92	129.14	104.96	112.78	120.44
<b>1521-25</b>	117.40	178.71	108.85	136.76	146.05
<b>1526-30</b>	149.15	161.72	117.94	147.34	157.35
<b>1531-35</b>	140.87	168.07	118.13	145.74	155.64
<b>1536-40</b>	129.36	172.16	122.21	142.64	152.33

**Sources:** see sources for Table 15.

Table 15

**Indices of Nominal and Real Wages of Master Building Craftsmen  
(Masons and Carpenters) in Southern England, 1501-05 to 1536-40**

**Means of 1451-75=100 and 1501-05=100**

Year	Master Building Craftsmen (Masons and Carpenters)						Unadjusted	Adjusted
	Nominal Day Wage in d. for a Master	Nominal Wage Index [= 6d. daily] 1451-75=100	Composite Price Index PBH 1451-75=100	Real Wage Index: Master 1451-75=100	Nominal Wage Index [=6d daily] 1501-5=100	Composite Price Index PBH 1501-5=100	Real Wage Index: NWI/CPI Master Craftsmen 1501-5=100	Real Wage Index: NWI/CPI Master Craftsmen 1501-5=100
Column 1	2	3	4	5	6	7	8	9
<b>1501-05</b>	6.000	100.000	106.793	93.746	100.000	100.000	100.000	100.000
<b>1506-10</b>	6.000	100.000	103.773	96.391	100.000	97.172	102.910	102.821
<b>1511-15</b>	6.000	100.000	108.520	92.528	100.000	101.618	98.408	98.700
<b>1516-20</b>	6.000	100.000	120.438	83.659	100.000	112.777	88.670	89.240
<b>1521-25</b>	6.000	100.000	146.045	69.128	100.000	136.756	73.123	73.739
<b>1526-30</b>	6.000	100.000	157.345	64.274	100.000	147.337	67.872	68.562
<b>1531-35</b>	6.000	100.000	155.640	65.008	100.000	145.741	68.615	69.345
<b>1536-40</b>	6.500	108.333	152.330	71.393	108.333	142.641	75.948	76.156

**Sources:** E. Henry Phelps Brown and Sheila V. Hopkins, 'Seven Centuries of Building Wages,' *Economica*, 22 (August 1955), reprinted in E.M. Carus-Wilson, ed., *Essays in Economic History*, vol. II (London, 1962), 168-78; and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 1-13; E.H. Phelps Brown and S.V. Hopkins, 'Seven Centuries of the Prices of Consumables Compared with Builders' Wage-Rates,' *Economica*, 23 (Nov. 1956), reprinted in E. M. Carus-Wilson, ed., *Essays in Economic History*, vol. II (London, 1962), pp. 179-96 and in E.H. Phelps Brown and Sheila V. Hopkins, *A Perspective of Wages and Prices* (London, 1981), pp. 13-59, containing additional statistical appendices not provided in the original publication. The price indices have been amended by recalculations of the original price data recorded on their working sheets now deposited in the Phelps Brown Collection in the Archives of the British Library of Economic and Political Science (London School of Economics).



Table 16

**A Comparison of the Purchasing Power of Money Summer  
Wages for Master Masons in the Antwerp Region and  
and Southern England, 1501-05 to 1536-40**

<b>Years</b>	<b>Antwerp: Master Mason: Daily Suumer Wage in d groot Flemish</b>	<b>Rhenish Wine: Litres of Red Wine Bought With Daily Wage</b>	<b>North Sea Herrings Number Bought With Daily Wage</b>	<b>Peas: Litres Bought With Daily Wage</b>	<b>Wheat: Litres Bought With Daily Wage</b>	<b>Sugar: Kilograms Bought With Daily Wage</b>
<b>Column 1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>1501-05</b>	8.333	2.922	48.450	19.695	19.842	1.022
<b>1506-10</b>	8.333	2.851	41.456	23.441	20.296	0.896
<b>1511-15</b>	9.333	2.720	38.341	20.595	22.778	0.582
<b>1516-20</b>	10.000	3.021	44.723	23.347	21.598	0.672
<b>1521-25</b>	10.267	2.676	31.296	19.004	14.364	0.635
<b>1526-30</b>	10.267	2.676	41.819	22.155	17.975	0.608
<b>1531-35</b>	10.067	2.858	43.642	15.729	15.321	0.838
<b>1536-40</b>	12.133	3.485	45.478	21.380	17.154	0.741

Table 16

**A Comparison of the Purchasing Power of Money Summer  
Wages for Master Masons in the Antwerp Region and  
and Southern England, 1501-05 to 1536-40**

<b>Years</b>	<b>England: Master Mason Nominal Daily Wage in d. sterling</b>	<b>Bordeaux Wine: No. litres Purchased by Daily Wage</b>	<b>Herrings: No. Herrings Purchased by Daily Wage</b>	<b>Peas: No. Litres Purchased by Daily Wage</b>	<b>Wheat: No. of Litres Purchased by Daily Wage</b>	<b>Sugar: Kilograms Bought With Daily Wage</b>
<b>Columns</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
<b>1501-05</b>	6.000	3.467	43.308	40.268	22.252	0.938
<b>1506-10</b>	6.000	3.413	42.848	37.339	33.347	0.756
<b>1511-15</b>	6.000	3.247	40.027	26.773	22.042	0.486
<b>1516-20</b>	6.000	3.364	42.463	33.033	21.263	0.409
<b>1521-25</b>	6.000	2.120	38.997	43.992	24.432	0.461
<b>1526-30</b>	6.000	2.472	38.168	23.368	16.082	0.382
<b>1531-35</b>	6.000	2.585	37.855	23.945	17.669	0.374
<b>1536-40</b>	6.500	2.638	38.168	30.501	21.901	0.388

**Table 16 A Comparison of the Purchasing Power of Money Summer Wages for Master Masons in the Antwerp Region and Southern England, 1501-05 to 1536-40**

Years	Advantage/Disadvantage of English Mason's Purchasing power: in percentages based on English wages and prices: in terms of				
	Wine	Herrings	Peas	Wheat	Sugar
Columns	14	15	16	17	18
1501-05	15.73%	-11.87%	51.09%	10.83%	-8.95%
1506-10	16.46%	3.25%	37.22%	39.14%	-18.58%
1511-15	16.23%	4.21%	23.08%	-3.34%	-19.73%
1516-20	10.19%	-5.32%	29.32%	-1.57%	-64.11%
1521-25	-26.22%	19.75%	56.80%	41.21%	-37.61%
1526-30	-8.23%	-9.57%	5.19%	-11.77%	-59.35%
1531-35	-10.56%	-15.29%	34.31%	13.29%	-124.00%
1536-40	-32.07%	-19.15%	29.91%	21.68%	-90.92%

**Source:** See sources for Tables 6, 11 - 15.

Table 17

## Values of Erasmus Receipts and Incomes in 1526-27

Date	Epistle Number	Place	Correspondent with Erasmus	Coins or Currency Designated	Value of Coin in d. groot Flanders Official values	Value of Coin in £ tournois France Official values	Value of Coin in d. sterling England Official values
Column 1	2	3	4	5	6	7	8
16-Jan-1526	1658	Antwerp	Erasmus Schets	French gold écus au soleil	76.00	2.000	52.00
07-Mar-1526	1671	Antwerp	Erasmus Schets	English pound sterling	365.17	9.559	240.00
17-Mar-1526	1681	Antwerp	Erasmus Schets	Rhenish gold florins	59.00	1.500	39.00
17-Mar-1526	1681	Antwerp	Erasmus Schets	Rhenish gold florins	59.00	1.500	39.00
21-Apr-1526	1696	Basel	Pieter Gilles	French gold écus au soleil	76.00	2.000	52.00
08-Sep-1526*	1750	Antwerp	Erasmus Schets	English rose crowns	70.00	1.875	54.00
08-Sep-1526	1750	Antwerp	Erasmus Schets	Flemish florin of account	40.00	1.047	27.37
02-Oct-1526	1758	Basel	Erasmus Schets	Rhenish gold florins	59.00	1.500	39.00
15-Dec-1526	1769	Basel	Erasmus Schets	Rhenish gold florins	59.00	1.500	40.00
15-Dec-1526	1769	Basel	Erasmus Schets	English angel-nobles	119.00	3.050	90.00
20-Dec-1526	1771	Esslingen	Johannes Fabri	Rhenish gold florins	59.00	1.500	40.00
20-Dec-1526	1771	Esslingen	Johannes Fabri	Rhenish gold florins	59.00	1.500	40.00
<b>Annual Totals</b>							
05-Nov-1526*	1750	Antwerp	Erasmus Schets	English rose crowns	76.00	2.000	60.00
24-Mar-1527	1796	Basel	Polydore Vergil	Florentine gold florins	80.00	2.275	61.00

Table 17.

## Values of Erasmus Receipts and Incomes in 1526-27

Date	Epistle No.	Amount or no. of coins	Value of Sum in £ groot Flemish	Value of Sum in £ tournois	Value of Sum in £ sterling	Oxford:	Antwerp:	Antwerp:
						Value in Days Wages Oxford Mason 6d sterling pd	Value in Days Wages Antwerp Mason 11d groot Fl. pd	No. of Years' Wage Income
1	2	9	10	11	12	13	14	15
16-Jan-1526	1658	138.500	43.858	277.000	30.008	1,200.333	1,052.600	4.577
07-Mar-1526	1671	38.000	57.819	363.238	38.000	1,520.000	1,387.652	6.033
17-Mar-1526	1681	72.000	17.700	108.000	11.700	468.000	424.800	1.847
17-Mar-1526	1681	600.000	147.500	900.000	97.500	3,900.000	3,540.000	15.391
21-Apr-1526	1696	400.000	126.667	800.000	86.667	3,466.667	3,040.000	13.217
08-Sep-1526*	1750	120.000	35.000	225.000	27.000	1,080.000	840.000	3.652
08-Sep-1526	1750	252.000	42.000	263.847	28.737	1,149.474	1,008.000	4.383
02-Oct-1526	1758	436.000	107.183	654.000	70.850	2,834.000	2,572.400	11.184
15-Dec-1526	1769	130.000	31.958	195.000	21.667	866.667	767.000	3.335
15-Dec-1526	1769	15.000	7.438	45.750	5.625	225.000	178.500	0.776
20-Dec-1526	1771	100.000	24.583	150.000	16.667	666.667	590.000	2.565
20-Dec-1526	1771	600.000	147.500	900.000	100.000	4,000.000	3,540.000	15.391
<b>Annual Totals</b>			789.206	4,851.835	534.420	<b>21,376.807</b>	<b>18,940.952</b>	<b>82.352</b>
05-Nov-1526*	1750	120.000	38.000	240.000	30.000	1,200.000	912.000	3.965
24-Mar-1527	1796	200.000	66.667	455.000	50.833	2,033.333	1,600.000	6.957

Table 17.

## Values of Erasmus Receipts and Incomes in 1526-27

Date	Epistle	Remarks	Remarks
		No.	
1	2	16	17
16-Jan-1526	1658	From England, via Martin Lompart of Basel	
07-Mar-1526	1671	received via Alvaro de Castro	
17-Mar-1526	1681	from Alvaro de Castro via 'your man Harst'	
17-Mar-1526	1681	Pieter Gillis to send these funds to Erasmus via Frans Gillis	
21-Apr-1526	1696	From Frans Gillis via Johann Froben	
08-Sep-1526*	1750	From Bishop of London via Erasmus Schets	
08-Sep-1526	1750	From Bishop of London via Erasmus Schets	converted into Flemish currency in Antwerp (as florins)
02-Oct-1526	1758	From Hieronymous Froben at the Frankfurt Fairs	converted from 697 florins 12 stuivers Flemish
15-Dec-1526	1769	Courtrai annuity, paid at Candlemas/Purificatio (2 Feb)	deposited in Bruges with Marcus Laurinus
15-Dec-1526	1769	Annual income from John, Bishop of Lincoln	to be sent via Castro to Hieronymous Froben for payment at Frankfurt Fairs
20-Dec-1526	1771	Gift from bishop of Trent on receiving Erasmus book	
20-Dec-1526	1771	Promised annuity from the Bishop of Trent	