Income mobility and economic growth in the Low Countries in the sixteenth century

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ABSTRACT. Economic growth and welfare are increasingly understood as flip sides of the same coin. This is apparent in the increasing study of economic and social inequalities as well as of the non-economic aspects of welfare. Much less attention is paid to the economic dynamics of historical societies at the level of the individual and the household. Unlike intergenerational social mobility defined in terms of occupational rankings, few historians have studied short- to middle-term income mobility. Consequently, the implicit assumption of a *histoire immobile* of household incomes in the past remains unchallenged. This has led scholars to accept historical income distributions at face value, even though it is generally admitted that what is of interest is really lifetime income rather than annual income. This paper analyzes patterns of short- and middle-term income mobility at household level in sixteenth-century 's-Hertogenbosch, a medium-sized town in the Southern Netherlands, which experienced a long-term cycle of expansion, stagnation and decline. It discovers (a) that income mobility was much higher than originally thought, both in the aggregate and at household level throughout the income distribution; and (b) that a clear positive connection can be made between economic expansion and mobility. In addition the paper demonstrates that the town had very high levels of geographical mobility. All these findings have significant implications for the economic and social history of the Low Countries in the early modern period, and the specificity of the region's high level of urbanization. They also force us to reconsider the question of life-time income patterns in the past, and to question the ways in which we can augment the study of synchronic income distributions for a better appreciation of the diachronic income vagaries of households in the past.

1. Introduction

ECONOMIC GROWTH AND WELFARE are flip sides of the same coin. This is apparent in the increasing study of economic and social inequalities as well as of the non-economic dimensions of welfare. The causal chains

between economic development and personal and social welfare therefore continue to command high research priority in all social sciences. One of the most influential ideas has been that of the 'Kuznets curve'. Although Simon Kuznets in 1956 originally couched his hypothesis in the most careful and tentative terms, since then economists and social scientists have eagerly built on the idea that the relationship between economic development and (income) inequality may trace an inverted U-shaped curve. In this view, economic development first increases inequality, while only in a second phase does inequality decrease.[1] Following this lead Jan Luiten van Zanden conjectured a long-term (European) 'super Kuznets curve' with the protracted upswing originating in the late middle ages. Especially in those regions that experienced economic expansion in pre-industrial Europe, first and foremost the medieval Italian city states or the seventeenth-century Dutch Republic, inequality surged.[2] This positive relationship also holds in the long run: as the European economy slowly developed, inequality inexorably widened the fortunes of rich and poor.[3] Socially-biased price trends (although themselves largely the result of the unequal distribution of income) further exacerbated the growing income inequality.[4] On the whole, in the European context, pre-industrial economic growth was a boon with mixed blessings. Hatching commercial, then industrial capitalism, further loaded the purses of the wealthy while shrinking real wages and average heights, together with rising inequality levels, testify to the grim fate of labourers.[5] The balanced rise of the middle classes,

1. A critical assessment in R.P. Korzeniewicz and T. P. Moran, 'Theorizing the relationship between inequality and economic growth', *Theory and Society*, 34 (2005), pp. 277-316.
2. J.L. Van Zanden, 'Tracing the beginning of the Kuznets curve: Western Europe during the early modern period', *Economic History Review*, 48.4 (1995), pp. 643-664.
3. B. Van Bavel, *Manors and Markets. Economy and Society in the Low Countries 500-1600*, (Oxford 2010).
4. P.T. Hoffman, D. Jacks, P. Levin and P. H. Lindert, 'Real inequality in western Europe since 1500', *Journal of Economic History*, 62.2. (2002), pp. 322-355.
5. R. Floud, R.W. Fogel, B. Harris and S.C. Hong, *The Changing Body: Health, Nutrition, and Human Development in the Western World since 1700*, (Cambridge 2011).

closely linked with the dynamics of urbanization, qualifies but does not overthrow the rather pessimist view regarding the social benefits of pre-industrial economic growth.

Mirroring the old debates on the possibility and extent of economic growth in pre-industrial Europe[6], this pessimistic understanding of pre-industrial welfare is contested by more optimistic voices. Specialists in material culture point at the increasing material riches an ever-greater number of people came to possess.[7] On the other hand, attention has been drawn to the biased nature of the real wage that is generally regarded as capturing the living standards of the majority of the population: in some and perhaps in many cases, real wages capture the experience of one particular and not very sizeable social group, and reflect neither income trends nor levels of the majority of the population, who enjoyed additional capital and profit incomes.[8] Increasing inequality could, indeed, proceed hand in glove with improving living standards for the poorest, where, from a Rawlsian development perspective, the latter would trump the former. Finally, the novel notion of the *inequality extraction ratio* has led Branko Milanovic, Peter Lindert and Jeffrey Williamson to reassess favourably the connection between long-term growth and inequality.[9]

This paper seeks to complicate the picture further by drawing attention to income mobility. In short, the study of income mobility expands the snapshot view of living standards and inequality associated with studies of real wages and income distributions. This is important,

6. J.L. Van Zanden, 'Early modern economic growth: a survey of the European economy 1500-1800', in M. Prak (ed.), *Early Modern Capitalism. Economic and Social Change in Europe 1400-1800*, (London 2001), pp. 69-87.
7. J. De Vries, *The Industrious Revolution: Consumer Behaviour and the Household Economy, 1650 to the Present*, (Cambridge, 2008).
8. B. Blondé and J. Hanus, 'Beyond building craftsmen. Economic growth and living standards in the sixteenth-century Low Countries: the case of 's-Hertogenbosch (1500-1560)', *European Review of Economic History*, 14.2. (2010), pp. 179-207.
9. B. Milanovic, P. H. Lindert and J. G. Williamson, 'Pre-industrial inequality', *Economic Journal*, 121 (2011), pp. 255-272.

because, "if income mobility were very high, the degree of inequality in any given year would be unimportant, because the distribution of lifetime income would be very even... An increase in income mobility tends to make the distribution of lifetime income more equal".[10] And although economic historians readily acknowledge the theoretical need to consider lifetime income, heuristic limitations in practice foreclose long-term and large-scale studies of short- or long-term income mobility. Two societies with identical wages and annual income distributions can bolster entirely different welfare structures if, in the former, all persons (or households) earn their original (unequally distributed) incomes every year of their life, whereas in the latter continued mobility leads to equal lifetime incomes for everyone. In line with the influential sociological *modernisation* paradigm and the classic *histoire immobile*, the former situation has been implicitly assumed by most students of pre-industrial Europe, and often put in contrast with the much more mobile, open and achievement-based modern society. Evidence for the latter is provided, especially by research on intergenerational (long-term) occupational and social mobility.[11] The alleged immobility of pre-industrial society, on the other hand, is a matter of faith rather than fact. Indeed, the few scraps and bits that are available suggest a different chronology, in the bold words of Gregory Clark: "instead of moving from a world of immobility and class rigidity in medieval England to a world of equal opportunity, we may have moved in the opposite direction".[12] Without going quite that far, this article is in line with previous findings by Christopher Friedrichs that depict pre-industrial urban life as buzzing with social, economic and geographical mobility, a situation far removed

10. P. Krugman, 'The rich, the right, and the facts', *The American Prospect*, 11 (1992), pp. 19-31; G. Fields, 'Does income mobility equalize longer-term incomes? New measures of an old concept', *Journal of Economic Inequality*, 8.4. (2010), pp. 409-427.
11. M. Van Leeuwen, 'Social inequality and mobility in history: introduction', *Continuity and Change*, 24.3. (2009), pp. 399-419; also see http://www.towardsopensocieties.org.
12. G. Clark, *Regression to mediocrity? Surnames and social mobility in England, 1200-2009*, working paper, University of California Davis (2009).

from the rigid and static world that literary sources have us believe. This is important for economic history, for it could be argued that, in a more mobile and open society, resource allocation operates more efficiently because economic practice – human capital formation and entrepreneurial skills – instead of birth and blood ties determines the fates of winners and losers.[13]

This paper analyzes patterns of short- and middle-term income mobility at the household level in sixteenth-century 's-Hertogenbosch, a medium-sized town in the Southern Netherlands that experienced a long-term cycle of expansion, stagnation and decline. Section 2 introduces the relevant macroeconomic indicators of average income, real wage and inequality, and the boundaries set by the sources. The analysis is based principally on the historical relationship between economic growth and income mobility as an equalizer of longer-term income. Section 3 documents that income mobility was much higher than originally thought, both in the aggregate and at the household level throughout the income distribution. It also shows that a clear positive connection can be made between economic expansion and mobility, which can be explained by the functional distribution of income and specifically the large share of profit incomes in total income. Section 4 discusses how the economic conjuncture strongly influenced the way in which income mobility equalizes longer-term incomes. All these findings have significant implications for the economic and social history of the Low Countries in the early modern period. They also force us to reconsider the question of living standards in the past from the perspective of life-time income patterns, and to question the ways in which we can augment the study of synchronic income distributions for a better appreciation of the diachronic income vagaries of households in the past. Conclusions bring the paper to a close.

13. T. Leunig, C. Minns and P. Wallis, 'Networks in the pre-modern economy: the market for London apprenticeships, 1600-1749', *Journal of Economic History*, 71.2 (2011), pp. 413-443.

2. Economic growth in sixteenth-century 's-Hertogenbosch

TO ALL INTENTS AND PURPOSES, sixteenth-century 's-Hertogenbosch (see Map 1) shared the characteristics typical of a pre-industrial town situated in a relatively dense urban network. Building on the lucrative tradition of export industries that brought the Southern Netherlands much of its riches in medieval times, the craftsmen and labourers of 's-Hertogenbosch created cutting-edge *belduque* knives and pointy pins, as well as different sorts of textiles, craft ironwork and the celebrated, albeit somewhat disturbing, brushstrokes of Hieronymus Bosch, all of which travelled across the European continent.[14] Even though a considerable share of the added value of these products ended up in Antwerp merchants' trunks, the general upsurge of the European economy also boosted the urban economy of 's-Hertogenbosch. Following the (fundamental but declining) importance of the export trades, the town provided key transit functions between the Low Countries and the Rhineland. The town's role as a centre for the surrounding countryside and small towns constituted the third major leg structuring the urban economy.[15] The late fifteenth-century upswing in all three elements resulted in a strong economic and demographic boom, which increased the urban population from 13,000 inhabitants in the last quarter of the century to over 20,000 by 1520. Despite temporary setbacks, economic performance remained stationary at a relatively high level until the late 1560s, and in some respects until the late 1570s. Then political turmoil and the development of the Eighty Years' War wreaked their havoc in the Low Countries, without sparing 's-Hertogenbosch; indeed, quite

14. H. Van der Wee, 'Structural changes and specialization in the industry of the Southern Netherlands, 1100-1600', *Economic History Review*, 28 (1975), pp. 203-221; H. Van der Wee, 'Industrial dynamics and the process of urbanization and de-urbanization in the Low Countries from the late Middle Ages to the eighteenth century. A synthesis', in H. 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. 307-381.
15. B. Blondé, *De sociale structuren en economische dynamiek van 's-Hertogenbosch*, 1500-1550, (Tilburg 1987).

the contrary. After two decades of crisis, the Brabant town regrouped and recovered, but even though the town regained its former population figures, the urban economy had undergone a severe structural transformation that weakened its footing in the urban network.[16]

The sixteenth-century boom not only supported extensive growth, but also resulted in intensive growth that raised per capita incomes by 15% between 1500 and 1550. Furthermore, in contrast with the heavily declining real wages recorded in the town and in the Low Countries as a whole, incomes in all brackets expanded.[17] Following the cycle of expansion and stagnation, which characterised the Antwerp economy, in 's-Hertogenbosch intensive growth ground to a standstill in the 1550s, and slid into reverse by the late 1570s.[18] In line with the Kuznets hypothesis, the early years of economic expansion led to a (minor) increase in income inequality. The fiscal registers detailed below document a Gini coefficient[19] rising from .73 in 1502 to .76 in 1507 and 1512. Over the longer run, economic stagnation and eventual decline again depressed inequality to an estimated Gini of .67 in the 1630s.

This changing macroeconomic context seriously affected the constraints and opportunities for the households of 's-Hertogenbosch. A lack of comparable studies complicates the formulation of hypotheses, although the case of German early-modern Nördlingen can be particularly revealing. There, the iron fists and jagged swords of the Eighty Years' War struck the hardest, crippling the local economy and the Nördlingen society. Economic inequality soared in times of war, general

16. J. Hanus, Affluence and inequality in the Low Countries. The city of 's-Hertogenbosch in the long sixteenth century, 1500-1650, unpublished PhD dissertation, Antwerp University (2010).
17. A detailed examination in Blondé and Hanus, 'Beyond building craftsmen'.
18. H. Van der Wee, *The Growth of the Antwerp Market and the European Economy (Fourteenth-Sixteenth Centuries)*, (The Hague 1963).
19. The Gini coefficient is a much favoured instrument to measure (income) inequality. In short, the coefficient ranges from 0 to 1, with the former indicating full equality, the latter perfect inequality. Alternative inequality (or concentration) indices such as the Theil or Atkinson index confirm the picture presented here.

living standards deteriorated and upward economic (wealth) mobility ground to a halt.[20]

The intricate relationship between economic development and economic opportunities seems self-evident.[21] Especially in the face of devastating and sustained warfare and a crumbling economy, it is easy to imagine how the potential for economic mobility was curtailed. Early modern 's-Hertogenbosch, however, was not the scene of such a dramatic tale. The massive downswing in mobility figures established in Nördlingen appears hardly applicable to our case. The growing opportunities for economic betterment in times of prosperity, on the other hand, offer more fertile ground. The heuristic situation of 's-Hertogenbosch curtails the analysis considerably but still allows us to compare patterns of income mobility in the early and mid-sixteenth century.

The present analysis is made possible by the survival of a series of detailed fiscal documents that allow a dense reading of household income trajectories. Between 1498 and 1513, and again in 1552 and 1557, the city treasurers of 's-Hertogenbosch organised in total fifteen rounds of income taxes or *gemene zettingen* (general levies), all levied on the same basis. In addition, house rent taxes were conducted in 1506 and 1547.[22] This

20. C.R. Friedrichs, *Urban Society in an Age of War: Nördlingen*, 1580-1720, (Princeton 1979).
21. Although not at all straightforward, see for example H. Kaelble and M. Thomas, 'Introduction', in Y. S. Brenner, H. Kaelble and M. Thomas (eds.), *Income Distribution in Historical Perspective*, (Cambridge 1991), pp. 1-56; N. Birdsall and C. Graham, 'Mobility and markets: Conceptual issues and policy questions', in N. Birdsall and C. Graham (eds.), *New Markets, New Opportunities? Economic and Social Mobility in a Changing World*, (Washington D.C. 2000), pp. 3-21; F. Bourguignon, 'The effect of economic growth on social structures', in P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth*, (Amsterdam 2005), pp. 1701-1747; G. Fields, 'How much should we care about changing income inequality in the course of economic growth?', *Journal of Policy Modeling*, 29 (2007), pp. 577-585.
22. This fiscal database was largely constructed by Dr Anton Schuttelaars, to whom I am most grateful for sharing this veritable treasure trove of information. These tax registers were part of the city accounts of 's-Hertogenbosch, which can be found at the City Archives (*Stadsarchief*) 's-Hertogenbosch, Old Archives (*Oud Archief*), numbers 1354-1410: city accounts 1496-1560 (hereafter: 'city accounts').

succession of fiscal registers documenting income (instead of wealth) is unique in the Low Countries and in most of Europe.[23] The exceptional character of these sources immediately raises questions as to their reliability and credibility to assess income at the household level. This article is not the place to dissect the general levies totally[24], but it is useful to highlight the main reasons why I find them more than adequate for the present purposes.

Firstly, excluding the poorest 10-15% of the urban population, all the approximately 3,000 urban households were taxed in the successive levies. The wide range and large number of different assessments, typically some 300 differing amounts in a 1000:1 range, further strengthens the case that the tax collectors fleeced their victims ruthlessly. Secondly, additional research unearthed evidence suggesting that the collectors, usually consisting of a ward master, an officer of the urban militia and a representative of the landlord (Philip the Fair and later his son, Charles V) who had ordered the organization of the levies[25], had a clear understanding of the financial capacities to be taxed. This evidence is based on the annual wages earned by numerous masons, carpenters and other workers labouring in city service, and on a detailed reconstruction of the urban capital markets, facilitated by studying the original transactions and a small number of inventories after death. Both lines of enquiry yielded income estimates for a range of *rentiers* that were fully aligned with the wage-based estimates.[26] Thirdly, the large variation in annually recorded tax contributions in the early sixteenth century confirms that,

23. G. Alfani, 'Wealth inequalities and population dynamics in early-modern northern Italy', *Journal of Interdisciplinary History*, 40:4 (2010), pp. 513-549.
24. For a detailed examination, cf. Blondé, 'De sociale structuren'; A. Schuttelaars, *Heren van de raad. Bestuurlijke elite van 's-Hertogenbosch in de stedelijke samenleving, 1500-1580*, (Nijmegen 1998); Blondé and Hanus, 'Beyond building craftsmen'; Hanus, 'Affluence and inequality'.
25. J. Hanus, *Tussen stad en eigen gewin. Stadsfinanciën, renteniers en kredietmarkten in 's-Hertogenbosch (begin zestiende eeuw)*, (Amsterdam 2007).
26. Blondé and Hanus, 'Beyond building craftsmen'.

instead of simply copying the previous registers, each year a new round of taxation was organised. Indeed, sixteenth-century 's-Hertogenbosch was characterised by substantial macro-level income mobility, as the following section will clarify.

3. Economic growth and income mobility

INCOME MOBILITY CAN BE APPROACHED and measured from a variety of theoretical and empirical angles. In order to capture the complexity of the mobility patterns of sixteenth-century 's-Hertogenbosch this section juxtaposes three perspectives, all questioning the relationship between economic trend and income mobility. Firstly, a series of aggregated measures discloses mobility at the macro level. A second approach aggregates from the individual income levels to attain a better understanding of the relative gains and losses. Thirdly, a number of mobility tables present a distributionally sensitive and disaggregated analysis. The next section will take up the question of income mobility as an equalizer of longer-term incomes.

Recently Gary Fields has provided a number of surveys and critical appraisals of the currently most-used measures and methods. Fields distinguishes six types of measures of economic (for example, income, wealth) mobility that all tackle specific and distinct issues and do not necessarily provide equal answers to similar questions: time dependence, positional movement, share movement, income flux, directional income movement and mobility as an equaliser of longer-term incomes.[27] In the case of 's-Hertogenbosch these measures did not reveal fundamentally different outcomes, which is why the discussion is limited to the results with the most intuitive appeal.

Table 1 summarizes a number of intragenerational or career mobility measures for four short-term periods: 1502-7, 1507-12, 1502-12 and

27. G.S. Fields and E.A. Ok, 'Measuring movement of incomes', *Economica*, 66 (1999), pp. 455-471.

1552-7. Perhaps the most salient feature of this analysis can be found in Panel A of the table, as here the peculiar success ratio of the record linkage is clearly underscored. In the *gemene zetting* of 1507, for example, no more than 40% of the taxpayers of 1502 could be identified. Similar results were found for the other five-year intervals (1507-12 and 1552-7), and, as the time frame expands, considerably less successful hits were recorded: only 27% for 1502-12.

Since the procedures adopted to identify households in various fiscal documents were strict, an important caveat is in order. Only certain links were withheld, defined by a very close match in terms of first name, surname, and/or profession, and geographical location. Since, in the early sixteenth century, the majority of the inhabitants of 's-Hertogenbosch were not known by surname, it was hazardous to identify households moving within the town. The example of Willem Voss, one of the labourers working for the town service, who enabled the identification of the fiscal registers as income taxes, is exemplary in this matter: in some lists he was recorded as Willem Voss, but before his move to the ward of the *Vismarkt* he was originally known as Willem *der stadwerckman* (the town worker) in the *Kerkstraat*. The level of detail of the city accounts and the fact that in his last year in the *Kerkstraat* he was identified as Willem Voss allowed me to track his migration within the city. The same was true in the case of some notable citizens who had already adopted a surname in the early sixteenth century. Former alderman Jan Kanapart, for example, could be traced when moving from the *Achter 't Wild Varken* ward to *Hinthamerstraat* in 1506.[28] The numbers of identifiable intra-urban migrants are very small – no doubt too small. A substantial, albeit not quantifiable, segment of those households not identified in Table 1 will therefore have moved from one dwelling to the next within the city walls of 's-Hertogenbosch.

Even so, the fiscal sources suggest that the population in this part of pre-industrial Europe was even more mobile than the migration literature

28. These examples are drawn from the fiscal database based on the city accounts of 's-Hertogenbosch.

and many studies based on burgher books would have us believe.[29] Each year, more than 10% of the urban tax-paying population vanished from the rolls (or at least from our sight), only to be replaced by an equal number of fiscal newcomers. In early sixteenth-century 's-Hertogenbosch, this implies an annual turnover of some 400 to 500 heads of households or easily between five and ten times the number of 'official' immigrants buying citizenship.[30] Obviously, as just explained, not all these 'newcomers' were actual immigrants. The fact that the urban population of 's-Hertogenbosch was highly mobile spatially remains, however. In my view, the fact of (massive) emigration is often overlooked when studying late medieval and early modern urban migration. Especially in towns with a modest place in the urban network, it is feasible that a large share of the migrants were temporary. If we accept the notion that each year many households left the city in search of fortune elsewhere, the 'urban graveyard' loses much of its grim allure, because this finding downplays the high mortality rates often assumed to characterize late medieval

29. P. Stabel, *De kleine stad in Vlaanderen: Bevolkingsdynamiek en economische functies van de kleine en secundaire stedelijke centra in het Gentse kwartier (14de-16de eeuw)*, (Brussels 1995); J. Lucassen and L. Lucassen, 'The mobility transition revisited, 1500-1900: what the case of Europe can offer to global history', *Journal of Global History*, 4 (2009), pp. 347-377.

30. As has been noted before, this finding has sombre implications for any micro-study of one particular urban centre in so far as it entails that only a small number of people will be traceable in various sources, because they did not reside in 's-Hertogenbosch for more than a few years. In order to fully incorporate (temporary) migrants and emigrated citizens, a much more robust body of sources is called for, as exemplified by the large-scale '3000 families' project in France or the Historical Sample of the Netherlands. See R. Van Uytven, 'Bronnen en methoden voor de studie van de vermogensgroepen in de steden (14de-16de eeuw)', in *Handelingen van het XXVIe Vlaams filologencongres*, (Ghent 1967), pp. 377-393; R. Van Uytven and W. P. Blockmans, 'De noodzaak van een geïntegreerde sociale geschiedenis. Het voorbeeld van de Zuidnederlandse steden in de late middeleeuwen', *Tijdschrift voor Geschiedenis*, 84 (1971), pp. 276-290; J. Dupâquier, 'L'enquête des 3000 familles', *Annales de Démographie Historique*, 1 (2004), pp. 7-18; J. Kok, K. Mandemakers and H. Bras, 'Van geboortebank tot collaboratory. Een reflectie op twintig jaar dataverzameling en onderzoek met de HSN', *Tijdschrift voor Sociale en Economische Geschiedenis* 6.4. (2009), pp. 3-36.

and early modern cities.[31] In any case, as a consequence, the economic mobility patterns presented here capture no more than a fragment of the urban population. Only those persons, households and families that survived and remained in the town long enough could be traced.

That being said, rather as nowadays, the different measures reported in Panel B of Table 1 reveal slightly different stories. A first and rather unexpected conclusion, drawn from the parameters 'time dependence' and 'positional movement', is that in the most expansive period 1507-12, total mobility was actually the smallest, whereas in 1552-7, the half-decade of stagnation or stability, the urban economy proved the most mobile. Both concepts, however, only address total mobility, with little concern for the extent and the direction of mobility. They do not reveal whether or not more people were becoming more wealthy, and by how much. To remedy the latter, and in line with the previous findings, the measures 'income flux' and 'log income flux' recorded the lowest values in 1507-12, and the highest in 1552-7. The high value for 'income flux' (compared to the other periods and to 'log income flux') in 1552-7 indicates that, especially at the upper end of the distribution, mobility was considerable.

The third Fields and Ok measure of 'directional income movement' provides more attractive insights as it addresses the issue of whether upward or downward mobility was predominant, while taking individual income levels into account. Interestingly, whereas the previous indices revealed relatively little difference between the periods under study, FO3 has a markedly dissimilar tale to tell. Firstly, it appears that the years 1502-7 mostly witnessed downward mobility, as did the mid-century period 1552-7. In sharp contrast, between 1507 and 1512, income gains noticeably outweighed income losses. These figures are reflected in the final row

31. Compare A. Sharlin, 'Natural decrease in early modern cities: a reconsideration', *Past and Present*, 79 (1978), pp. 126-138; A. Sharlin, 'From the study of social mobility to the study of society', *American Journal of Sociology*, 85.2. (1979), pp. 338-360; A.M. Van der Woude, 'Population developments in the northern Netherlands (1500-1800) and the validity of the urban graveyard effect', *Annales de Démographie Historique*, 19 (1982), pp. 55-76; J. De Vries, *European Urbanization, 1500-1800*, (Cambridge, Mass. 1984).

of Panel B, where it becomes apparent that, in the first period examined, 40% of all tracked tax payers experienced economic gains, whereas during the second half-decade no less than 62% was upwardly mobile. This figure at least partially explains the high income and percentile correlations between 1507 and 1512, and thus the total mobility recorded in this period: a majority of the population experienced income changes in the same (upward) direction. The following section develops this point. All in all, only about one in every eight tax payers saw their contribution unchanged, which contrasts with the 37% immobile tax payers recorded in 1552-7. By mid-century, fewer people were mobile, but, as disclosed by the previous parameters, those that were mobile, experienced more mobility than their counterparts did half a century previously.

To come to a better understanding of the mobility regime of 's-Hertogenbosch, it is useful to disaggregate total mobility in a number of ways. Figure 1 builds on the 'directional movement' parameter and reports income gains and losses of the households of 's-Hertogenbosch grouped by relative change from the base to the end year. Thus, between 1507 and 1512 more than 40% of all tax-paying households saw their income increase between 10 and 50% (light grey area); for about 12%, this period brought an income windfall of one half or more (white area). This marked spell of upward mobility contrasts with the periods 1502-7 and 1552-7, when much smaller segments of the urban society bettered their financial situation. Especially in the latter period, as we saw before, a large number of households experienced only modest income fluctuation (less than 10%, dotted area).

These findings are largely similar to Friedrichs' conclusions that economic prosperity tended to come in close association with chances for upward mobility.[32] Especially in the period 1507-12, a large segment of the inhabitants of 's-Hertogenbosch increased their income. The less adventurous 1550s did not witness such increased levels of downward

32. Friedrichs, *Urban society*, 95-143.

mobility. Rather, for the households of 's-Hertogenbosch the urban economy produced less opportunities to advance their own income positions. Compared to the early years of the century, economic chances had grown in a more unequally-distributed way: larger shares of the urban population experienced little to no income mobility and potential disaster loomed for small shares that saw their income dwindle to less than a quarter of its original value (black area).

These figures suggest that perhaps the most important achievement of the period of economic growth in 1507-12 was that it alleviated the risk of downward mobility, all too common in pre-industrial society (also see below).[33] Above all, the risk of potentially disastrous income reductions exceeding 50% was strongly mitigated in this period, in so far as it was seen in only 4% of all households. In periods of minor growth (1502-7) and overall economic stability (1552-7), certain segments of the population were clearly more vulnerable to massive income losses.

The analysis so far has been one of macro-mobility, addressing mobility in society as a whole, paying little or no attention to individual trajectories. As a consequence, no more than cautious hypotheses could be formulated as to where mobility was greatest. There are other methods, however, able to refine the broad picture presented above, and clarify which groups of the economic distribution were the winners or losers of the era. The most straightforward and widely-used approach is to construct a number of mobility tables that allow disentangling mobility patterns for various income brackets. In our case, mobility tables were constructed on the basis of quintiles: five groups each capturing one fifth of the distribution with quintile I aggregating the poorest 20% of the tax payers. For the various periods under scrutiny, mobility tables were

33. U. Pfister, 'La mobilité structurelle descendante et l'accès informel au statut social: deux éléments-clé de la stratification sociale dans la société ancienne (Zurich aux XVIIe et XVIIIe siècles)', *Bulletin du Centre Pierre Léon d'histoire économique et sociale*, 2 (1992), pp. 19-40; G. Clark, *A Farewell to Alms. A Brief Economic History of the World*, (Princeton 2007).

constructed and reported in Table 2. This table should be read as follows: in the first table, summarizing mobility between 1502 and 1507, it may be seen that, of all households situated in the top quintile V in 1502, 44% were found in the highest quintile (V) in 1507, 7% in quintile IV, and so forth. For those households originating in the middle quintile III in 1502, for example, 0% ended up in quintile V five years later, 7% in quintile IV, 23% in quintile III, 10% in quintile II and 1% in the poorest quintile I. In other words, in 1502 23% of all households originating in quintile III did not experience sufficient mobility to ascend or descend a quintile group. In the three tables, the numbers are sorted per row and indicate the percentages of households ending up in the various quintiles after originating in the base year in the specific quintile of that row. The flip side of this approach, where the absolute numbers are expressed in column shares instead of row shares (indicating the origins of all households ending up in quintile V, for example), has not been pursued here.

Again, a major caveat is called for. The final column of each table specifies the success ratio of the linking procedure. Unsurprisingly, given the peculiarities of the fiscal registers of 's-Hertogenbosch, this ratio tracks a clear social gradient. Since the higher in the fiscal hierarchy, the more households were known by surname, for all periods studied the success ratio shown in quintiles IV and V comes as no surprise. As before, the main conclusion of Table 2 is that the majority of the tax-paying households in 's-Hertogenbosch could not be traced throughout a number of successive tax records. The reasons for this are both heuristic and substantive, in my view. On the one hand, there was the identification procedure, complicated by the lack of uniform name-giving in sixteenth-century 's-Hertogenbosch. This hindered the successful identification of households that moved within the town. On the other hand, a significant share of this group of not-identified households would have died or emigrated from the town. A lack of sources pushes a better quantitative understanding beyond our reach. For the discussion below, it is important to keep these heuristic constraints in mind.

Income mobility in sixteenth-century 's-Hertogenbosch followed a number of patterns. Firstly, the most prosperous households were relatively secure in their affluence. In the three periods under study, a strong majority of those households that could be identified in both years and started out in quintile V remained in the top quintile. To a lesser extent, the same was true for quintile IV, although during the first period (1502-7) as a group they did suffer a relatively strong degradation. In the other periods, the households in this quintile, grouping percentiles 60 to 80, managed to hold their ground. Secondly, the mobility experience of the (lower) middle groups showed more fluctuation. The chances of remaining in the same quintile were the highest by mid-century; the best opportunities to get ahead in life for quintiles II and III came in the period 1507-12. Most downward mobility from these quintiles was recorded in the period 1502-7. Thirdly, at the bottom end the main finding is that only a small fraction of all households could be tracked. Between 66% and 79% could not be identified with certainty five years later. Be that as it may, if we focus on the households that could be found, again 1502-7 offered the least chances of upward mobility. In 1552-7, less than half of those situated in the bottom quintile in 1552 were found at the bottom end in 1557. All in all, despite these differences and the source-related difficulties, the mobility tables clearly demonstrate the massive income mobility characterising sixteenth-century 's-Hertogenbosch.

More to the point, they confirm and refine the findings of Table 1: the first half-decade of the sixteenth century was a period that was structurally different from the second half. For all except the wealthiest of 's-Hertogenbosch, the former period resulted in higher probabilities for downward mobility and less chances for increasing their relative position. Between 1507 and 1512, the opposite was true. As we already knew from the measure of directional income movement (Fields and Ok 3), more people were upwardly mobile in this period. The mid-century experience, set against a background of modest economic performance, was situated somewhere in between, with heightened chances for the poorer people.

Thus, during the first half of the economically-buoyant opening decade of the century (1502-7), a large number of households were economically mobile, but winners and losers largely evened out. The second period (1507-12) contained a large number of winners and therefore witnessed less positional mobility. This pattern suggests that especially those gaining economic ground stayed in 's-Hertogenbosch while those people facing more dire prospects 'chose' to leave the town, probably heading towards ever-enlarging Antwerp.[34] By mid-century (1552-7), the economic situation was less rosy and more people were downwardly mobile, implying that mostly the losers of the day lingered in the town. There is no doubt that the situation had become more volatile for some, with both greater opportunities for those getting ahead in life and deeper pitfalls for the less fortunate, and had become more stable as more people than before experienced no mobility.

4. Income mobility as an equalizer of longer-term incomes

BY LINKING ALL TAX PAYERS in the subsequent *gemene zettingen* of early sixteenth-century 's-Hertogenbosch, a unique picture emerges. Barring only very few exceptions, no historical studies have been able to reconstruct the dynamic economic tales of thousands of urban households in detail. Instead of cross-sectional evidence documenting a household's income or house rent in one particular year, this alternative reading of the fiscal registers of 's-Hertogenbosch documents their income histories during the adventurous decade 1502-12.[35] Despite the limited chrono-

34. Of course, there might be a systematic bias in the identification procedures, whereby the better-off had more chances of being identified than the middle- and lower-income brackets. There is certainly some truth in this claim, as will be detailed below. On the other hand, if we assume that this bias remained unchanged throughout the sixteenth century, the tentative conclusions formulated here still stand.

35. It is unfortunate, but not uncommon in history, that this particular heuristic goldmine has no equivalent for any other period during the long sixteenth century, and that it predates the surviving craft guild and parish registers, to name only those, by half a century.

logical span of this data, a myriad questions are posed when surveying the 9,000-odd households paying taxes at least once in this period, or the 2,357 who were recorded at least five times. The research agenda of this paper is limited, however, as explained in the opening section. The main purpose of this part is to relate short-term to longer-term income mobility, thereby questioning to what extent annual incomes in fact capture long-term (ideally lifetime) income trends and levels.

Before introducing a number of aggregated measures (devised by Fields), it is useful to focus on the particular experiences of a small range of households in 's-Hertogenbosch. Indeed, by zooming in on the histories of the knife-makers of 's-Hertogenbosch over several decades, the careers of these artisans and workers spring to life (Table 3).[36] Although all essential evidence concerning their age, life cycle or household composition is missing, we can at least assemble a rough sketch of the contours of a decade in the life of a number of early sixteenth-century urban households. Among the 29 knife-makers recorded at least five times (out of the ten taxes levied between 1502 and 1512), look at Everart *de mesmaker* who lived in *Hinthamerstraat*. He was one of the more prosperous knife-makers in town, with tax assessments placing him between percentiles 80 and 90, or in the upper 20% of the urban population. Although Everart witnessed a comparatively uneventful decade, he did see his (standardised) tax contribution oscillate about 3 fl. between 1502 and 1505, then fall to 2.5 fl. in 1506-7, before strongly rising to 4 fl. in 1512-13. Others experienced a more linear income history: Gijsbert Herincx, for example, managed to gradually triple his tax contribution from 0.5 fl. in 1502, via 0.6, 0.7, 0.9 and 1.1 fl. in the following years to 1.5 fl. in 1512-3. For Huygh *de mesmaker*, conversely, the first decade of the sixteenth century must have brought great distress, for he saw his tax assessment plummet from 0.75 fl. at first to a meagre 0.05 fl. in 1512. Moving from *Postelstraat* to *Vughterstraat*

36. Note that in this table the original tax contributions are recorded, not the estimated incomes.

between 1506 and 1507 could not turn his fortune, nor did it prevent his fall from the middle of income distribution (53-62% between 1502 and 1505) to the bottom at 25% in 1508, and 3% in 1512-13.

These three men represent the typical triad of possible trajectories: trendless fluctuation, (steep) rise or (sharp) decline. It is no straightforward task to quantify properly the weight of each of these scenarios in the collective history of the knife-makers of early sixteenth-century 's-Hertogenbosch. Furthermore, for want of additional information, it is impossible to explain these divergent income paths. Changes in household composition may account for a large part: the minor upswings and downswings in Everart's tax assessment may be the result of the coming and going of subsequent apprentices, or of his wife's varying labour input between the births of their children. Gijsbert Herincx's impressive increase in income could have been the consequence of marriage, of increasing returns on inherited wealth, of increasing labour input on the part of his wife and/or children, or of a proliferation of his skills and clientele in the early years of his occupational career. Conversely, Huygh's unfortunate drop may have resulted from the death of his wife and/or children, perhaps combined with declining skills due to old age. Again, without additional information, these results cannot be properly interpreted.

Fortunately, the lack of micro-level data does not prevent drawing a range of important macroeconomic conclusions. From the perspective of the study of living standards and income inequality, the most important question to tackle is whether income mobility equalized longer-term income in sixteenth-century 's-Hertogenbosch. Gary Fields has proposed the following measure:

$$\varepsilon = 1 - [G(A)/G(X)]$$

whereby A represents the vector of average incomes between base and end year, X the vector of base-year incomes, and G(.) the Gini coefficient. This way, "the measure ε is an index of equalization in the sense that a positive value indicates that average incomes A are more equally

distributed than base-year incomes X, a negative value indicates that A is less equally distributed than X, and a zero value that A and X are distributed equally unequally".[37]

The results of this calculation are summarized in Panel C of Table 1. Interestingly, they reveal that in 1507-12 and 1552-7 income mobility equalized longer-term incomes to an extent similar to that of present-day societies.[38] Average incomes over the period 1502-7 on the contrary, were more unequally distributed than the base year incomes of 1502. This corresponds with the minor upswing in income inequality recorded in this period. As noted above, the Gini coefficient increased from .73 in 1502 to .76 in 1507, before stagnating at this level in the following decades. In 1502-7 income mobility further exacerbated income disparities. Table 2 suggested that, mostly for the lower reaches of the distribution, this period brought too few opportunities for betterment. In the other periods under examination, average incomes over a five year period led to a more egalitarian distribution of income. No straightforward structural explanation for this particular mobility pattern springs to mind.

For the case and period under scrutiny, short-term income mobility did not fundamentally influence income distribution. This is even truer when considering the ten-year period 1502-12, since there ε is (much) smaller than for the five-year periods 1507-12 and 1552-7. These findings are hopeful for economic historians interested in income distribution and lifetime incomes at the macro level: at least within the narrow confines of the present case-study, it could be argued that, even though it was quite massive on the short term, income mobility did not undermine the basic structures of wealth and poverty. Whether or not the same can be said in different geographical and/or chronological settings is an issue only future research can document.

37. Fields, 'Does income mobility equalize longer-term incomes?'; note that any other Lorenz-consistent inequality measure could be used instead of the Gini coefficient.
38. Compare ε scores in *Ibid.*

5. Explaining income mobility

DURING ITS BOOMING SIXTEENTH CENTURY, the town of 's-Hertogenbosch was a buzzing, energetic and mobile place. Temporary and longer-term migrants came and went, lured by the numerous benefits urban life presented. Underlying this paper is the idea that we have not yet fully credited pre-industrial urban achievements. Without going quite as far as the economist Edward Glaeser, who recently proclaimed the city man's greatest invention[39], there is no doubt that urban income mobility, the enticing potential of substantially improving one's welfare and that of future generations, was a defining characteristic of (pre-industrial) urban life. Framed in the 'vacancy chains theory' developed by social mobility theorists[40], one could claim that the pre-industrial town year after year offered many chances for its newcomers to take up the place left behind by the high numbers of people leaving the city by choice or in coffins. In a sense this dynamic understanding allows us to see in a different light the massive economic inequalities and substantial shares of poor characterizing the pre-industrial city. For as Glaeser rightly commented, "cities aren't full of poor people because cities make people poor, but because cities attract poor people with the prospect of improving their lot in life".[41] The (mildly) rising inequality levels between 1502 and 1507 might thus be good rather than bad news for urban society at large.

The substantial levels of income mobility may be partially explained by the structure of the urban economy of sixteenth-century 's-Hertogenbosch. Contrary to an intuition implicitly present in most accounts of pre-industrial economy, labour in the narrow sense did not generate most income for the urban households. For all income brackets, capital and profit incomes accrued to impressive sums that reduced to less than one third the

39. E. Glaeser, *Triumph of the City. How our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier and Happier*, (New York 2011).
40. For example R.L. Breiger, 'Introduction: on the structural analysis of social mobility', in R.L. Breiger (ed.), *Social Mobility and Social Structure*, (Cambridge 1990), pp. 1-23.
41. Glaeser, *Triumph of the City*, 70.

share of labour in total income.[42] Playing the market, clever entrepreneurship and hard work could yield substantial rewards, although the market control of the craft guilds admittedly erected important entry barriers.[43]

Two other avenues to income mobility could be documented in only the faintest of detail. First consider the most obvious road to fortune: inheritance. Thanks to the records of inheritance settlements for a handful of prosperous citizens, the tax career could be linked to substantial wealth transfers. Thus, following the death of his father Marcelis in 1509, taxed at 7.5 fl in 1507, Jan van Ekart saw his fiscal contribution rise from 3 fl. in 1507 to 6 fl. in 1512. After the death of Geerlinck van den Bossche in 1512 (taxed at 12.5 fl. in 1511), his sons-in-law Frans Toelinck and Jan Gheck upped their tax levy from 7 fl. to 10 fl. and from 4 fl. to 8 fl. respectively. In these cases, the cause is obvious but a lack of sources unfortunately prevents a broader quantitative examination. A second potential road to riches, at least today, is experience and the length of a career. However, the results of an exercise for seventeenth-century 's-Hertogenbosch (not reported here[44]) linking fiscal outcomes to years of graduating as a master in various craft guilds (bakers, blacksmiths, linen-weavers, butchers and coopers) suggest that, in this period, no systematic relationship existed between a career's length and individual prosperity. Even though the evidence is inconclusive, the working hypothesis for seventeenth-century 's-Hertogenbosch is that there was no 'natural' accruement of income as an artisan career matured.

42. A more detailed study of the functional distribution of income in sixteenth- and seventeenth-century 's-Hertogenbosch is in preparation. Also see A. McCants, 'Inequality among the poor of eighteenth-century Amsterdam', *Explorations in Economic History*, 44 (2007), pp. 1-21; Hanus, *Affluence and inequality*.
43. S. Ogilvie, '"Whatever is, is right"? Economic institutions in pre-industrial Europe', *Economic History Review*, 60:4 (2007), pp. 649-68; S. Ogilvie, 'Rehabilitating the guilds: a reply', *Economic History Review*, 61.1. (2008), pp. 175-182; S.R. Epstein, 'Craft guilds in the pre-modern economy: a discussion', *Economic History Review*, 61.1. (2008), pp. 155-174.
44. This exercise is not reported here since it entails the seventeenth century. For more details, cf. Hanus, *Affluence and inequality*.

This brings us back to a more random component in the economic history of the urban households of early modern 's-Hertogenbosch, or rather the close connection between economic trend and income mobility established in this particular case. This relationship reveals the expected characteristics: more upward and, perhaps more importantly, less downward mobility in a time of expansion; more stability in a contracting economy. During the opening years of the sixteenth century, when growth was more capital-intensive and the benefits of some were the losses of others, income trajectories of rich and poor widened disparities in (longer-term) incomes. In a second phase (1507-12), income growth was a general phenomenon as three out of every five households increased their income and only one in five saw their fortunes dwindle. The contrast with what might be considered the most typical pre-industrial period 1552-7 is clear: in this economically stagnant period, most households remained relatively stable in their income position, and for one in three households a period as short as five years in this fragile pre-industrial economy could cut income substantially.[45]

On the aggregate level, the mobility regime of sixteenth-century 's-Hertogenbosch closely resembles that of present-day western societies, recording similar scores in all the indices calculated in Table 1 to those documented for twentieth-century France or the UK.[46] The break often invoked by social scientists between ancient régime and modern society, between a social and economic dynamics based on ascription rather than achievement, thus becomes very much blurred by these findings. In many crucial ways, the late-medieval and early-modern cities of the Low Countries played a role very comparable to present-day urban centres as they lured both rich and poor immigrants with the attractions of proximity, density and opportunity. Economic and social historians would do well to heed Edward Glaeser's insight that "if a city

45. It is an unfortunate shortcoming of this paper that the income vagaries of the urban households of 's-Hertogenbosch could be traced only for such short periods of time.
46. Fields, 'Does income mobility equalize longer-term incomes?'.

is attracting continuing waves of the less fortunate, helping them succeed, watching them leave, and then attracting new disadvantaged migrants, then it is succeeding in one of society's most important functions. If an area has become the home of default for poor people who are staying poor, then that area is failing".[47] Historians all too eagerly embrace the second scenario when describing rich and poor in the pre-industrial city. But who is to say that the knife-makers Huibert and Gijsbert did not make the most out of their short stay in 's-Hertogenbosch, raising their taxed incomes by some 50% in a few years before disappearing again from the fiscal registers? Did they pack up their newly-found fortunes and connections in search of more prosperity in Antwerp, Mechelen or further away still? Heuristic constraints fatally complicate the possibility of capturing the life stories of more than a handful of late medieval and early modern households or families. That should not, however, lead us to paint too bleak a picture of pre-industrial urban life.[48]

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47. Glaeser, *Triumph of the City*, 81.

48. Also see Blondé and Hanus, 'Beyond building craftsmen'.

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APPENDIX

Income mobility and economic growth in the Low Countries in the sixteenth century

Map 1. The Low Countries in the sixteenth century

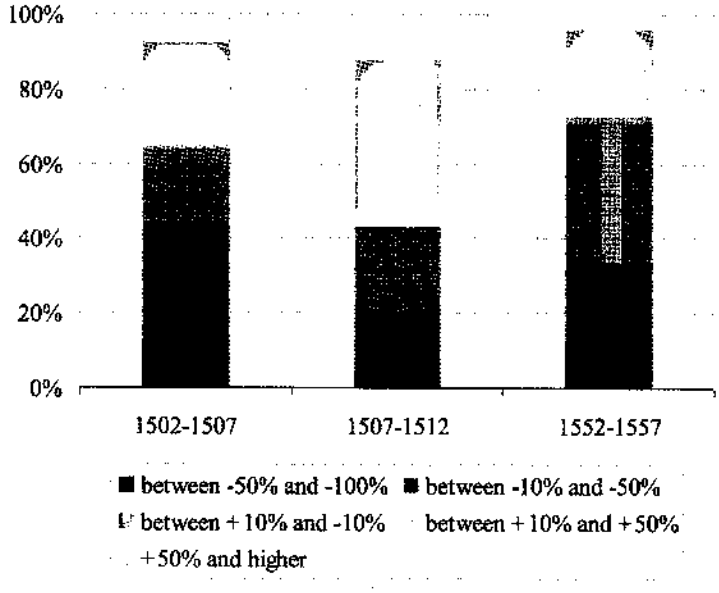
Table 1. Patterns of short-term income mobility in sixteenth-century 's-Hertogenbosch*

Period	1502-7	1507-12	1552-7	1502-12
Panel A. Identification ratios				
Number	1,237	1,490	2,032	828
Number as % of total number of households in first fiscal register	40%	45%	50%	27%
Panel B. Aggregated income mobility measures				
Time dependence $TD = R(X,Y)$	0.90	0.95	0.87	0.86
Positional movement $PM = R(P(X),P(Y))$	0.86	0.91	0.85	0.83
Income flux $FO1 = (1/n) * \Sigma\|x_i-y_i\|$	24.2	22.2	42.4	33.0
Log income flux $FO2 = (1/n) * \Sigma\|\log(x_i) - \log(y_i)\|$	0.48	0.41	0.50	0.56
Directional income movement $FO3 = (1/n) * \Sigma(\log(x_i)-\log(y_i))$	-0.07	0.18	-0.15	0.06
Directional movement Total households + (0) −, in %	40 (13) 47	62 (12) 26	52 (10) 39	28 (37) 34
Panel C. Income mobility as equalizer of longer-term incomes				
$\varepsilon = 1 - [G(A)/G(X)]$	-0.006	0.019	0.018	0.006

With x_i = income household i in base year; y_i = income household i in end year; X = vector of incomes in base year; Y = vector of incomes in end year; A = vector of average incomes of base and end year; P(X) = vector of percentile ranks of households in base year; G(A) = Gini coefficient of vector A; R = Pearson's correlation coefficient

* Source: city accounts, Fields and Ok, 'Measuring movement of incomes'.

Figure 1. Summary of individual economic mobility, in amount of taxes paid from base year to final year, 1502-7, 1507-12 and 1552-7*



* Source: city accounts.

Table 2. Mobility tables for 's-Hertogenbosch, expressed in percentage of origins, regarding only those identified*

1502 - 1507	V	IV	III	II	I	% not identified
V	83	13	2	2	0	47
IV	15	52	23	8	2	48
III	0	18	58	25	3	60
II	0	6	21	44	29	66
I	0	5	5	19	67	79

1507 - 1512	V	IV	III	II	I	% not identified
V	87	10	2	0	2	37
IV	10	75	12	2	4	49
III	0	25	58	15	3	60
II	0	6	33	47	14	64
I	3	3	6	35	53	66

1552 - 1557	V	IV	III	II	I	% not identified
V	86	11	1	0	1	28
IV	11	75	8	2	5	36
III	0	20	61	9	7	46
II	0	0	22	54	20	59
I	4	4	4	48	43	77

* Source: city accounts.

Table 3. Tax careers of knife-makers in the general levies of 's-Hertogenbosch, 1502-12

Nr	Name	Tax contribution in stuivers, per fiscal register									
		I	II	III	IV	V	VI	VII	VIII	IX	X
1	Staes	80	55	140	140	120	92	120	120		
2	Everart	60	60	50	60	58	60	50	50	80	80
3	Gerit		27	40	40	40	40				
4	Roelof Bartel						28	30	30	35	35
5	Herman	27	30	32	28	28	25	40	40		
6	Henrick Hollen		29	28	27	26	30	30	30	30	24
7	Otto Gerit Hollen	37	30	28	27	26	25	24	16	32	32
8	Aryaen	29	25	22	19	18		16	16		
9	Gijsbert Herincx	10	12	12	14	14	18	22	22	30	30
10	Boudewijn		15	13	15	16	15	16	16		
11	Huibert		13	14	14	12	14	18	18		
12	Jan	9	10	15	15	16					
13	Peter Arnts		12	10	12	10	10			18	18
14	Hubert			20	20	16	18	1			2
15	Dirk van Hees	15	15	14	11	10	9				10
16	Jan	10	9	10	14	12	15				
17	Cornelis Arnts	20	21					8	8	7	4
18	Jan van Mulheze	10	8	6	8	8	8	10	8	20	20
19	Naet	16	12	11	11	10	7	5	4	13	15
20	Simon Naets	10		12	10	8	9	8	8	13	13
21	Mathijs	6		4	5	4	6	8	8	20	20
22	Huygh	15	14	15	14	12	3	5	4	1	1
23	Wouter			1		2	10			5	5
24	Jacop Lamberts				4	4		4	4	8	2
25	Willem Peter Seberts			4	4	4	5	3	4	4	3
26	Jan van Waelre			1	2	2	1	6	6	3	
27	Henrick			2	2	2				4	4
28	Gijsbert		2	2	2	2	3				
29	Gerit	1		1	1		1			2	1