

THE ECONOMIC CONTRIBUTION OF LABOR MIGRANTS  
IN THE EUROPEAN MARITIME LABOR MARKET  
OF THE LONG EIGHTEENTH CENTURY

Jelle van Lottum

In their seminal paper “The mobility transition revisited,” which appeared in the *Journal of Global History* in 2009, Jan and Leo Lucassen provided for the first time a solid quantitative framework that convincingly refuted the persistently prevalent theory of the mobility transition.<sup>1</sup> This thesis, formulated by Walter Zelinsky in the 1970s, proposed that large scale population mobility was mainly a product of modernization and industrialization and that as such, the (early to mid) nineteenth century formed a watershed between the sedentary age of the early modern period and the much more dynamic and mobile population of the modern age.<sup>2</sup> Although several studies on early modern or early industrial migration in Europe had argued along similar lines,<sup>3</sup> by providing a well-structured quantitative overview of migration rates between 1500 and 1900, Lucassen and Lucassen made for the first time truly explicit that in Europe such a watershed did in fact not exist, and that changes in migration rates actually developed much more gradually over time.

Nevertheless, their analysis showed that despite the fact that a clear break in migration rates in Europe cannot be discerned, in the underlying characteristics of Europe’s moving population significant shifts took place in the transition from the pre-modern to the industrial era. The most important change the quantification of European migration reveals

---

<sup>1</sup> Jan Lucassen and Leo Lucassen, “The Mobility Transition Revisited, 1500–1900: What the Case of Europe can Offer to Global History,” *Journal of Global History* 4 (2009), pp. 347–77. For the underlying estimates and historiography, see Jan Lucassen and Leo Lucassen, “The mobility transition in Europe revisited, 1500–1900: Sources and methods,” *IISH Research paper*, no. 46 (2010).

<sup>2</sup> W. Zelinsky, “The Hypothesis of the Mobility Transition,” *Geographical Review*, 61 (1971), pp. 219–49.

<sup>3</sup> Jan Lucassen, *Naar de kusten van de Noordzee. Trekarbeid in Europees perspectief, 1600–1900* (Gouda 1984); Leslie Page Moch, *Moving Europeans: Migration in Western Europe since 1650* (Bloomington, IN, 1992); Nicholas Canny (ed.), *Europeans on the Move: Studies on European Migration, 1500–1800* (Oxford, 1994); Dirk Hoerder, *Cultures in Contact: World Migrations in the Second Millennium* (Durham, NC, 2002); Klaus J. Bade, *Migration in European History* (Oxford, 2003).

can be found in the relative share of what the two authors typified the category of “soldiers and sailors”—the latter of the two we will focus on in this paper. They showed that throughout the early modern period this category did in fact add most to overall migration rates.<sup>4</sup> With the advent of industrialization, this category became much less important; urbanization became the relatively most important category in the period thereafter. Although the number of migrant soldiers was in fact much larger than that of migrant sailors,<sup>5</sup> the figures shown in the aforementioned article, which was later complemented by more detailed estimates published in a research paper,<sup>6</sup> demonstrate that the early modern European maritime labor market was of considerable size and was indeed an international labor market *par excellence*, showing on average much higher participation migration levels than most other sectors of the European economies. In fact, the early modern maritime sector stood out not only because of its high migration rates; but because it was a key sector in the early modern European economy. Not only did transport play a crucial role in bringing about economic growth in the pre-industrial period,<sup>7</sup> it was also a highly dynamic sector in which significant technological advancement through the ages had led to strong increases in labor productivity.<sup>8</sup>

The estimates of migration rates provided in the article in the *Journal of Global History* are indeed a useful framework in diachronically assessing the relative importance of migration in the European economy and society at large. However, as a framework, it is relatively limited in determining the extent to which migration in general,<sup>9</sup> and the different migrant categories in particular, contributed to relative economic performance.<sup>10</sup>

<sup>4</sup> Lucassen and Lucassen, “Mobility Transition,” p. 370, Figure 11.

<sup>5</sup> *Ibidem*, p. 369, Figure 9.

<sup>6</sup> Lucassen and Lucassen, “Revisiting.”

<sup>7</sup> Richard W. Unger (ed.), *Shipping and Economic Growth 1350–1850* (Leiden and Boston, 2001); D. Acemoglu, S. Johnson, and J.A. Robinson, “The Rise of Europe: Atlantic Trade, Institutional Change and Economic Growth,” *American Economic Review*, 95 (2005), pp. 546–79; Robert C. Allen, *The British Industrial Revolution in Global Perspective* (Cambridge, 2009); E.A. Wrigley, “Urban Growth and Agricultural Change: England and the Continent in the Early Modern Period,” *Journal of Interdisciplinary History*, 15 (1985), pp. 683–728.

<sup>8</sup> Jan Lucassen and Richard W. Unger, “Shipping, Productivity and Economic Growth,” in Unger, *Shipping*, pp. 3–46; Richard W. Unger, *Dutch Shipbuilding before 1800: Ships and Guilds* (Amsterdam, 1978).

<sup>9</sup> This is by definition the case when studying migration rates in isolation, because the data is not qualified as such.

<sup>10</sup> This was, in fact, one of the goals of the quantification exercise, see Lucassen and Lucassen, “Mobility Transition,” p. 351. For a more elaborate response to the applicability of their approach as a tool in understanding migration’s role in relative economic devel-

Because the contribution of particular migrant groups can indeed differ strongly, the size of these groups may be important, but is not necessarily correlated to its economic contribution. What this essay aspires is to use the quantitative framework of Jan and Leo Lucassen's article as a starting point, but to then take an additional step by trying to *qualify* the actors in it—in this case, that of the maritime workers in the early modern period. In other words, this essay will try to establish to what extent the *quality* or *skill* of these migrants added to overall skill levels, and if changes over time can be discerned. The maritime labor market of the early modern period makes for a very useful “historical laboratory” for such an exercise. It was, as we have just learned, a sector characterized by high levels of labor migration, but also one which played a key role in the early modern European economy. Moreover, as we will see below, it is one of the best documented early modern labor markets.

The theoretical framework from which we depart in this essay is that of so-called new growth theorists, which postulates that human capital formation is an important determinant of long-term economic growth, and can thus explain different economic trajectories.<sup>11</sup> Similarly, as studies of contemporary labor mobility have pointed out, there is a potential positive effect of labor migration on economic performance, not only because labor is an essential production factor, but also because the influx of skilled workers into an economic sector will increase its human capital stock.<sup>12</sup> Although it has been argued that human capital (or skills) of “common workers” did not play an important role in economic growth before the Industrial Revolution,<sup>13</sup> recent research argues the contrary.<sup>14</sup> It has been shown that in the European merchant marine of the eighteenth century the human capital level of ordinary sailors had a positive and significant effect on the fleet's labor productivity. In particular, numeracy skills

---

opment, see Jelle van Lottum, “Some Considerations about Economic Development and Migration,” *Journal of Global History*, 6 (2011), pp. 339–44. For a general discussion of the article, see the discussion dossier in *Journal of Global History*, 6 (2011), pp. 299–344.

<sup>11</sup> R. Lucas jr., *Lectures on Economic Growth* (Cambridge, 2002).

<sup>12</sup> R.E. Lucas, *International Migration and Economic Development. Lessons from Low-income Countries* (Cheltenham, 2005).

<sup>13</sup> Allen, *Industrial Revolution*; Joel Mokyr, *The Gifts of Athena* (Princeton, 2002); Joel Mokyr, *The Enlightened Economy: An Economic History of Britain, 1700–1850* (Princeton, 2010).

<sup>14</sup> Jelle van Lottum and Jan Luiten van Zanden, “Labour Productivity and Human Capital in the Maritime Sector of the North Atlantic, c. 1672–1815” (working paper), downloadable at: <<http://vkc.library.uu.nl/vkc/seh/research/Lists/Seminar%20Program/Attachments/58/Paper%20JVL%20JVZ%20UTRECHT.pdf>>.

of seamen, which can be calculated by using the method of “age heaping”,<sup>15</sup> had a strong effect on labor productivity of the vessels they worked on. Therefore, during the eighteenth century not only did labor productivity make significant advances as a result of capital investments (or technological change), investments in human capital of maritime workers appeared to have mattered as well.<sup>16</sup>

The work of Jan Lucassen has shown that migrants were very aware that skills played an essential role in bringing about productivity increases, and that as such, having particular skills were acknowledged and rewarded. This was not only true for those migrants who operated individually, but especially for those migrants who (like sailors) operated in groups, such as grass mowers and brickmakers.<sup>17</sup> This contribution takes a consecutive step by establishing the effect on the sector at large. Was it “simply” a matter for maritime employers or local communities to train one’s own people to bring about increases in skill levels, or did in fact migrants play a role in providing fleets with skilled workers? In other words, to what extent did employers increase overall skill levels aboard their ships endogenously, by relying on their native labor supply, or externally, through attracting foreign laborers? If the latter is the case, that would of course mean that the answer to the general question just raised is that indeed migration contributed to economic performance. But, the opposite can be true as well of course; migration can also bring overall skill levels down. Is there any evidence that the latter was the case, and consequently that economies that relied on immigration were hampered by it?

To answer these questions we will use a dataset derived from the so called interrogation sections of the Prize Paper Archive, which has been described extensively elsewhere.<sup>18</sup> The dataset consists of all relevant

---

<sup>15</sup> B.J. A’Hearn, J. Baten and D. Crayen, “Quantifying Quantitative Literacy: Age Heaping and the History of Human Capital,” *Journal of Economic History*, 69 (2009), pp. 783–808.

<sup>16</sup> It is important to note that skill levels of maritime workers were relatively high compared to other occupational groups, see Jelle van Lottum and Bo Poulsen, “Estimating levels of numeracy and literacy in the maritime sector of the North Atlantic in the late eighteenth century,” *Scandinavian Economic History Review*, 59 (2011), pp. 56–81.

<sup>17</sup> Lucassen, *Naar de kusten*; Piet Lourens and Jan Lucassen, *Arbeitswanderung und berufliche Spezialisierung. Die lippischen Ziegler im 18. und 19. Jahrhundert* (Osnabrück, 1999); for a more global comparison see Jan Lucassen, “Brickmakers in Western Europe (1700–1900) and Northern India (1800–2000): Some Comparisons,” in Jan Lucassen (ed.), *Global Labour History. A State of the Art* (Bern, 2006).

<sup>18</sup> Jelle van Lottum, Jan Lucassen and Lex Heerma van Voss, “Sailors, National and International Labour Markets and National Identity, 1600–1800,” in Unger, *Shipping*, pp. 309–52.

variables of merchant ships and its crews, such as the country of origin of the ship, and the age, place of birth and place residence of its crewmembers. As we will see below, this dataset not only makes it possible to estimate skill levels of maritime workers, it also allows for an analysis of international labor mobility in the sector. Furthermore, it consists of data samples for two periods, one at the turn of the seventeenth century (1672–1720), in the text this will be referred to as Period 1, and one a century later (1770–1813), or Period 2.<sup>19</sup>

*The dynamics of the international labor market for sailors*

Despite the fact that the early modern maritime labor market was one of the most international of all European labor markets, the extent to which maritime employers from different European nations relied on foreigners to man their ships could differ strongly. The literature on the European maritime labor market suggests that in Southern Europe (including France) shipowners tended to rely largely on native workers, whereas the crews on the fleet belonging to the countries bordering the North Sea, those from the Dutch Republic in particular, recruited a more international crew.<sup>20</sup> The variety in foreign labor participation across the European merchant fleet reflected to a great extent on the different stance of (national) authorities towards the employment of foreigners. Indeed, regulations regarding hiring could vary from the very strict, for instance in the case of Spain and France,<sup>21</sup> to virtually non-existing, like in the case of the Dutch Republic.<sup>22</sup> Below we will see that the analysis here broadly

<sup>19</sup> Period 1 deals with ships taken during the Third Anglo-Dutch War (1672–4) and the War of the Spanish Succession (1701–14); the second period covering the War of the American Revolution (1776–83), the Fourth Anglo-Dutch War (1780–4) and the French Revolutionary and Napoleonic Wars (1793–1815).

<sup>20</sup> Jan Lucassen, “The International Maritime Labour Market (Sixteenth-Nineteenth Centuries),” in Paul C. Royen, Jaap R. Bruijn and Jan Lucassen (eds), *Those Emblems of Hell? European Sailors and the Maritime Labour Market, 1570–1870* (St. John’s, 1997), pp. 11–24; Van Lottum et al., “International Labour Markets.”

<sup>21</sup> For Spain see Carla Rahn Phillips, “The Labor Market for Sailors in Spain, 1570–1870,” in Van Royen et al., *Those Emblems*, pp. 329–48. For France: T.J.A. Le Goff, “The Labour Market for Sailors in France,” in Van Royen et al., *Those Emblems*, pp. 287–328.

<sup>22</sup> Karel Davids, “Maritime Labour in The Netherlands, 1570–1870,” in Van Royen et al., *Those Emblems*, pp. 41–71; Jelle van Lottum, *Across the North Sea. The Impact of the Dutch Republic on Labour Migration, c. 1550–1850* (Amsterdam, 2007), Chapters 2 and 4 in particular. For an overview of the formal regulations towards foreigners in the Dutch Republic, see Jan Lucassen and Rinus Penninx, *Newcomers. Immigrants and Their Descendants in The Netherlands 1550–1995* (Amsterdam, 1995); Jan Lucassen and Leo Lucassen, *Winnaars*

confirms the established view, but it also elucidates that the international market for sailors was much more dynamic over time than existing literature suggests, demonstrating not only considerable change in overall migrant participation in the sector, but notably with regard to its composition and characteristics.

Before taking a closer look at comparative levels of foreign labor participation in Europe in the period under scrutiny, it is first important to define the term migrant or migrant worker more precisely. Pertaining to migrant workers in the maritime sector, two main groups of migrant workers may be discerned: *sedentary* and *non-sedentary migrants*.<sup>23</sup> These two groups formed what has been labelled the *dual layered immigrant labor market*.<sup>24</sup> The first layer consists of those migrants who not only participated in a foreign labor market, but settled there as well, indeed were sedentary. Many of these migrants founded a family in their new country of residence and often, though by no means in all cases, stayed there for the rest of their life.<sup>25</sup> The group of *non-sedentary migrants* were made up of workers who participated in a foreign labor market, but did not take up residence there.<sup>26</sup> Whereas the first group is relatively well-recorded, as they ended up in civic or church records such as marriage, baptism, burial and tax registers, the latter usually is not, making them much more difficult to trace. However, fortunately the dataset used for this contribution uniquely allows analyzing both groups.<sup>27</sup> As we will discuss later, these

---

*en verliezers. Een nuchtere balans van vijfhonderd jaar immigratie* (Amsterdam, 2011); Jan Lucassen, "Holland, een open gewest. Immigratie en bevolkingsontwikkeling," in Thimo de Nijs en Eelco Beukers (eds.), *De Geschiedenis van Holland*, Vol. II: 1572–1795 (Hilversum, 2002), pp. 181–215; Piet Lourens and Jan Lucassen, "Zunftlandschaften" in den Niederlanden und im benachbarten Deutschland," in Wilfried Reininghaus (ed.), *Zunftlandschaften in Deutschland und den Niederlanden im Vergleich* (Münster, 2000), pp. 11–43.

<sup>23</sup> Van Lottum, *Across the North Sea*, pp. 139 ff; idem, "Labour Migration and Economic Performance: London and the Randstad, c. 1600–1800," *Economic History Review*, 64, 2 (2011), pp. 531–70.

<sup>24</sup> Van Lottum, *Across the North Sea*, p. 146.

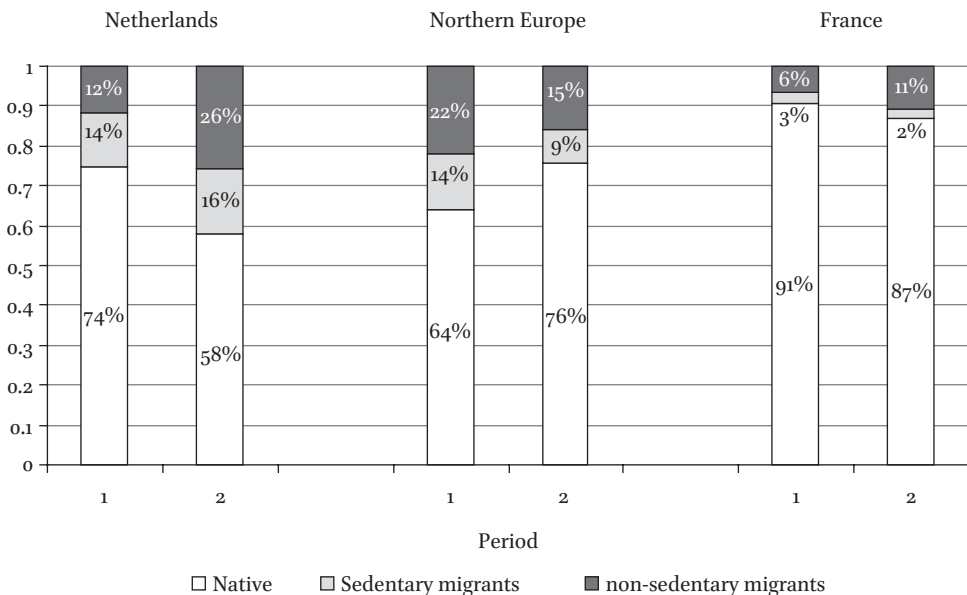
<sup>25</sup> Lucassen and Lucassen, *Winnaars en verliezers*, pp. 191–3. For sailors' families in particular see Daniëlle van den Heuvel, "*Bij uijtlandigheid van haar man*". *Echtgenotes van VOC-zeelieden aangemonsterd voor de kamer Enkhuizen (1700–1750)* (Amsterdam, 2005).

<sup>26</sup> Apart from sailors this group also consisted of soldiers and domestic servants, the latter whom were mainly female, see Lucassen and Lucassen, *Winnaars en verliezers*, pp. 194–9. Seasonal migrants should be regarded as a separate category, mainly because of their particular cyclical migratory behavior. Nevertheless, the underlying mechanism (such as the pull and push factors), and the overall migration patterns (also part of the North Sea system), did not differ significantly from the latter group, see Lucassen, *Naar de kusten*.

<sup>27</sup> The source provides information about the place of birth and residence, as well as the labor market in which an individual worked in.

two groups are thought to have different characteristics, making a distinction between the two imperative. In the next two sections we will take a closer look at the characteristics of these two migrant groups, particularly in relation to their skills and their economic contribution; let us for now, however, focus on their quantitative development over time.

In Figure 1, we can see how the migrant composition aboard three merchant fleets developed between the two periods mentioned in the introduction. In the figure, the Scandinavian countries of Sweden, Norway and Denmark are clustered in one group with (northern) Germany as “Northern Europe”; the data for France, and the Netherlands was large enough to analyze as individual countries.<sup>28</sup>



Source: Prize Paper Dataset.

Note: the share of migrants aboard Scandinavia and German ships is calculated by taking into account absolute numbers of foreigners on individual national fleets. This implies that migration *between* Scandinavian countries is also taken into account.

Figure 1. The share of migrants per labor market

<sup>28</sup> These two countries and one country-group broadly represent the different recruiting regimes in the European maritime labor market, see: Van Lottum et al., “Labour Markets,” pp. 337–8.

When we look at the overall shares of foreigners in Figure 1, we find that French merchant vessels did not have large numbers of foreigners amongst their crews, which confirms the findings of earlier studies. Although throughout the eighteenth century the share of foreigners aboard French ships increased slightly from 9 to 13 percent in Period 2, the figure shows that compared to the countries north of the border, this was in fact still quite low. The difference between Southern and Northern Europe becomes indeed immediately clear when we shift to the Dutch Republic and Northern Europe, which both show migration levels more than twice that of France. What is remarkably striking about Period 1 is that the Northern European fleet exceeds the share of foreigners aboard Dutch ships—with a share of 36 percent foreigners aboard the former versus 26 percent on the latter. This was mainly the result of migration between Scandinavian countries, which, in contrast to other studies, are here regarded as separate nations.<sup>29</sup> In any case, it is clear that the tables were turned a near century later. While amongst the Scandinavian and German merchant vessels, overall foreign labor participation dropped by 12 percentage points to 24 percent—indeed about the same level the Dutch Republic had in Period 1; shares of foreigners in the Dutch Republic increased quite spectacularly by 16 percentage points to 42 percent. Again, this confirms earlier estimates of foreigners amongst Dutch merchant crews, which showed a strong increase in the eighteenth century.<sup>30</sup>

When we shift to the changes in the composition of the migrant workers aboard the three fleets, a point that has not been considered in earlier studies, interesting changes took place between the two periods, particularly in the Dutch labor market. Here we see that the significant rise of foreign labor participation was nearly the sole effect of rising levels of *non-sedentary* migrants. In contrast, in Northern Europe the *decline* of foreign participation in the merchant fleet was considerably more balanced between the two migrant groups. Again, among the French merchant fleet hardly any change took place, although it is interesting to note that the increase of migrants was only due to the growth of non-sedentary workers.

In the following sections, in which we focus more closely on the maritime labor market of the Dutch Republic,<sup>31</sup> we will take a closer at the

---

<sup>29</sup> Van Lottum et al., "Labour Markets," pp. 337–8, in particular p. 338, note 69.

<sup>30</sup> Van Lottum, *Across the North Sea*, pp. 136–7, Figures 4.3 and 4.2 and Appendix III.

<sup>31</sup> For an overview of the functioning of the Dutch maritime labor market see amongst others Lucassen, "Maritime Labour Market"; Davids, "Maritime Labour"; Jaap R. Bruijn and



changes that took place in the migrant labor market and the potential consequences thereof for economic performance in this sector. However, for now it is important to point out that the data presented in Figure 1 provides for the first time quite robust evidence for the hypothesis advanced elsewhere about the way in which the two layers of the Dutch immigrant labor market had developed.<sup>32</sup> This hypothesis proposed that the Dutch immigrant labor market underwent a process of transformation during the eighteenth century, changing from a largely sedentary immigrant labor market in the seventeenth century to a much more volatile one a century later. In this market, migrants increasingly participated without actually settling in the host nation. This development coincided with a strong increase in the number of seasonal migrants to the coastal provinces of the Dutch Republic, as shown by Jan Lucassen's seminal account on seasonal migration in Europe.<sup>33</sup> All in all, it is apparent that during the eighteenth century the Dutch immigrant labor market became much more volatile and this is indeed exactly what we can retrace in Figure 1. Around the turn of the seventeenth and eighteenth centuries, sedentary migrants were a majority amongst immigrant sailors working on Dutch ships; in other words, more than half of the foreign sailors serving the Dutch merchant marine were residents of the Dutch Republic. Although in the period thereafter their share slightly increased by 2 percent, the figure shows indeed that the overall rise in foreign participation was mainly the result of a surge in levels of non-sedentary migrants. The most mobile of the migrant workers more than doubled in the intermediate period and their share rose to a little more than a quarter of the entire labor force.

In conclusion, the data presented in Figure 1 shows that the international labor market for sailors was highly dynamic and showed major changes over time as well as demonstrated strong regional differences. Whereas in Southern Europe, here represented by France, the recruitment of sailors was a largely national affair, in Scandinavia, Germany and the Dutch Republic, shipowners relied greatly on foreign workers. Interestingly, while the former underwent a process of "de-internationalization",<sup>34</sup>

---

Jan Lucassen (eds), *Op de schepen der Oost-Indische Compagnie. Vijf artikelen van J. de Hullu* (Groningen, 1980); Van Lottum, *Across the North Sea*, esp. Chapter 4.

<sup>32</sup> See Van Lottum, *Across the North Sea*, pp. 142–3; Jan de Vries, "How Did Pre-industrial Labour Markets Function?," in George Grantham and Mary MacKinnon (eds), *Labour Market Evolution. The Economic History of Market Integration, Wage Flexibility and the Employment Relation* (London, 1994), pp. 39–63.

<sup>33</sup> Lucassen, *Naar de kusten*.

<sup>34</sup> Van Lottum, "Labour Migration," pp. 554–6.

the latter become more and more dependent on migrants in general and non-sedentary ones in particular. Before we can determine what exactly the changes signalled here meant for the overall economic contribution of migrants to the sector, which is after all the goal of this essay, we first need to get a better understanding of the character of the changes that occurred in the international maritime labor market. The question is whether the transformation we have seen in this section reflect mere changes in the migratory behavior, or if the *character* of the migrant population underwent modifications as well. To establish this, we now shift our focus to the labor market that underwent the most significant change, and was one of largest in Europe: the Dutch maritime labor market.

*The Dutch maritime labor market in the long eighteenth century*

In the previous section we saw that during the eighteenth century the Dutch Republic witnessed a strong rise in the share of migrants aboard Dutch vessels, growing from 26 percent in Period 1 to 42 percent at the end of the century. This growth was significantly due to a growing demand for labor in the maritime sector, as well as a stagnating national supply. Indeed, during the eighteenth century the Dutch maritime sector witnessed a period of considerable expansion, not only in overall tonnage shipped, but also in terms of the number of men employed.<sup>35</sup> The latter was particularly the case in the merchant marine. It is estimated that between 1694 and 1780, overall employment in the sector rose from a total workforce of 20,000 to 25,000, reaching levels that were even higher than those during the Dutch Golden Age.<sup>36</sup> However, because the native population growth remained more or less flat during this period,<sup>37</sup> and

---

<sup>35</sup> Jelle van Lottum and Jan Lucassen, "Six Cross-sections of the Dutch Maritime Labour Market: A Preliminary Reconstruction and its Implications (1607–1850)," in Richard Gorski (ed.), *Maritime Labour in the Northern Hemisphere c. 1600–1950* (Amsterdam, 2007), pp. 13–42. See also: Jan Luiten van Zanden and Milja van Tielhof, "Roots of Growth and Productivity Change in Dutch Shipping Industry, 1500–1800," *Explorations in Economic History*, 46 (2009), pp. 389–403. For an overview of the size of the European maritime labor market see Lucassen and Lucassen, "Mobility Transition," p. 365, Table 3. Their figures rely heavily on Lucassen, and Unger, "Labour Productivity" and Richard W. Unger, "The Tonnage of Europe's Merchant Fleets 1300–1800," *American Neptune*, 52 (1992), pp. 247–61.

<sup>36</sup> In showing such growth, the maritime sector clearly was quite exceptional. When we look at the overall growth levels, studies have shown that from the mid-seventeenth century the economy of the Dutch Republic entered a period of persistent stagnation (combined with spells of decline) which lasted until the end of the century.

<sup>37</sup> On the causes of the stagnating population growth see Jan de Vries, "The Population and Economy of the Pre-industrial Netherlands," *Journal of Interdisciplinary History*,

there was little incentive for native workers to leave more secure sectors of the economy,<sup>38</sup> the increased demand for workers could only be met by attracting more foreign workers, who, as we saw earlier, came in large numbers.

Earlier we have referred to the fact that the increase in the number of immigrants, and in particular that of non-sedentary migrants, for the first time really substantiates the presumed shift in the dual layered immigrant labor market of the Dutch Republic. The main cause for this labor market transformation is thought to have been the emergence of new economic core regions in the traditional migration field of the Dutch Republic. This was first suggested by Jan Lucassen, who showed that in the eighteenth century, an expanding core like Copenhagen started to attract migrants from traditional recruitment areas of the Dutch Republic, such as the Duchies of Schleswig and Holstein.<sup>39</sup> The emergence of these new cores led to a process wherein migrants who would otherwise have moved to the Netherlands (the dominant core region), now could choose between different employers, including ones closer to home. From the perspective of the Dutch labor market, the growth of (new) core regions such as Hamburg, Copenhagen and Stockholm acted as intervening opportunities in its traditional hinterland, and it is thought that as a result of this it suffered serious supply constraints.<sup>40</sup>

Although the causes and the main characteristics of the labor market transformation (as summarized above) are relatively well known, and indeed the migration data presented in the previous section confirms earlier hypotheses about its development, the effects of these changes (i.e. the *extent* of the supply constraints) are less well understood. Roughly, we can think of two key consequences for the Dutch economy. The first, which is outside the scope of this essay, is the hypothesis of the *reduced immigrant consumption*.<sup>41</sup> This hypothesis argues that the increase of non-sedentary migrants had a dampening effect on wages in the sectors where these migrants worked, while at the same time the demand for

---

15 (1985), p. 678; De Vries's analysis of the demographic changes relies on the work of A.M. van der Woude, "Demografische ontwikkeling van de Noordelijke Nederlanden 1500-1800," in *Algemene Geschiedenis der Nederlanden*, vol. 8 (Bussum, 1980), pp. 139-56. See also Jan Luiten van Zanden, *The Rise and Decline of Holland's Economy: Merchant Capitalism and the Labour Market* (Manchester, 1993), pp. 25-9.

<sup>38</sup> De Vries, "Pre-industrial Labour Markets."

<sup>39</sup> Jan Lucassen, "The North Sea: A Crossroad for Migrants?," in Juliette Roding and Lex Heerma van Voss (eds.), *The North Sea and Culture (1550-1800)* (Hilversum, 1996), p. 179.

<sup>40</sup> Van Lottum, "Labour Migration," *passim*.

<sup>41</sup> *Ibidem*, p. 563.

goods and services fell—after all, non sedentary migrants consumed less than their sedentary colleagues—thus affecting wages in these sectors indirectly. More relevant, however, is the second hypothesis, which proposes that because of the increased competition for workers, the Dutch Republic failed to attract skilled workers.<sup>42</sup> The argument is that because wages in the “new” growing cores started to converge with those in the Dutch Republic, local labor markets were more capable of keeping their skilled workers. In other words, local or national labor markets “creamed off” especially skilled migrants, who were increasingly enticed by better opportunities close by, thus leaving workers with fewer skills to the progressively more “volatile” international labor market, which, as we saw earlier, the Dutch Republic increasingly had to rely on.

The foregoing hypothesis thus presupposes that the labor supply to the Dutch labor market underwent significant changes during the eighteenth century. As just mentioned, the data presented here can for the first time test this hypothesis and shed more light on the mechanisms behind it. In the next and final section we will look closer at the aspect of declining skill levels, here we will briefly focus on the general facet of change in the migrant population by investigating alterations in migration patterns, or rather changes in the place of origin of migrants as well as in the age structure. If substantial changes therein exist, this in turn would suggest that the alterations in the composition of the migrants population, as shown in the previous section, were not only a reflection of changes in the migratory behavior, but indeed, as the second hypothesis predicts, was part of a more substantial transformation of the labor supply to the Dutch Republic.

Like most economic migrants in the Dutch Republic, migrant workers in the Dutch maritime labor market were part of what Jan Lucassen coined the North Sea system.<sup>43</sup> This system consisted of migrants from especially the coastal regions of the northeastern part of the North Sea area (largely excluding England),<sup>44</sup> moving to the Dutch Republic in search of work,

---

<sup>42</sup> Ibidem, pp. 560–3.

<sup>43</sup> Jan Lucassen, *Migrant Labour in Europe, 1600–1900. The Drift to the North Sea* (London, 1987). See also: Van Lottum, *Across the North Sea*, Chapter 2, and idem, “Some Aspects of the North Sea Labour Market, c. 1550–1800,” in Hanno Brand, Poul Holm and Leos Muller (eds), *The Dynamics of Economic Culture in the North Sea and Baltic Region (ca. 1250–1700)* (Hilversum, 2007).

<sup>44</sup> Lucassen, “Crossroads,” p. 180, Map 3; Jan Lucassen, “Mobilization of Labour in Early Modern Europe,” in Maarten Prak (ed.), *Early Modern Capitalism. Economic and Social Change in Europe, 1400–1800* (London, 2001), pp. 161–74. Van Lottum, *Across the North Sea*, Chapter 3 and idem, “Labour Migration.”

who were lured by relatively high wages and ample job opportunities.<sup>45</sup> When we look at the migrants' country or region of origin in the dataset in Table 1 below, it becomes clear that indeed the Scandinavian countries and Germany were the main suppliers of maritime workers to the Dutch labor market in both periods. Still however, Table 1 elucidates that important shifts did take place.

When we start by looking at the "all migrants" category it becomes evident that not only was Northern Europe indeed the main supplier of workers to the Dutch maritime labor market, but also that its role became more important over time. While in Period 1, still a quarter of the migrant workers came from other European regions, in particular from the Southern Netherlands and France, by the end of the eighteenth century this was only less than 10 percent. The increase in the share of German and Scandinavian workers as a whole was fairly evenly balanced, but when we look at the shares of sedentary and non-sedentary workers we see greater differences. When comparing the changes in the groups of sedentary and non-sedentary migrants, we find that it are especially the Scandinavians who become more volatile, rising from an already high 42 percent of all non-sedentary migrants to no less than 58 percent.<sup>46</sup> If we connect this

Table 1. Origins of workers in the Dutch maritime labor market

	Period 1			Period 2		
	All migrants	Sedentary	Non-sedentary	All migrants	Sedentary	Non-sedentary
Scandinavia	43%	44%	42%	50%	38%	58%
Germany	29%	25%	33%	39%	49%	32%
Other*	29%	31%	25%	11%	13%	9%
<i>Total</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>

\* mainly from France and Southern Netherlands.

Source: Database Prize Papers.

<sup>45</sup> See also Lucassen and Lucassen, *Winnaars en verliezers*, Chapter 5.

<sup>46</sup> For specific literature on Scandinavian migration to the Dutch Republic during the early modern period, see amongst others: Sølvi Sogner and Jelle van Lottum, "An Immigrant Community? Norwegian Sailor Families in Amsterdam in the 17th century," *History of the Family*, 12, 3 (2007), pp. 153–68; Sølvi Sogner, "Young in Europe. Norwegian Sailors and Servant-girls Seeking Employment in Amsterdam," in Jean-Pierre Bardet, François Lebrun and Jacques Dupâquier (eds.), *Mesurer et comprendre. Mélanges offerts à Jacques Dupâquier* (Paris, 1993), pp. 515–32.

to the figure shown in the previous section, it logically follows that the increase in non-sedentary migration was mainly the effect of more Scandinavians joining the Dutch merchant marine.<sup>47</sup> German seamen, on the other hand, become relatively more sedentary; in Period 2 about half of all sedentary migrants in the Dutch Republic was of German origin.<sup>48</sup>

A second aspect that could give us an idea of the extent to which the characteristics of the group of foreign workers in the Dutch maritime labor market changed over time is to look at its age structure. Dutch maritime historian Bruijn has argued that during the early modern period the average age of a European sailor was below the age of thirty.<sup>49</sup> Our dataset suggests that those working in the Dutch maritime labor market had a slightly higher average age of around 33, but as we will see below the different categories show important changes over time. Such changes in age structure could of course be an indicator of a variety of possible transformations, varying from changes in the role migration played in the life-cycle of a migrant population, to an indicator of alteration in marital behavior and/or family strategies. However, age can also be seen as an indicator of experience. Of course, there is not a direct correlation between age and experience; all depends on the starting age and the intensity of the training. However, as Bruijn has concluded, because we know that during this period most maritime careers tended to start at a very young age—boys were often in their teens—shifts in the average age may tell us something about the level of experience of sailors at the moment of time they entered the international labor market.<sup>50</sup> In Table 2 below, the average age of the three categories of workers is shown for the two periods.

---

<sup>47</sup> This confirms findings based on different sources, Van Lottum, *Across the North Sea*, pp. 147–50.

<sup>48</sup> Here the findings differ from those in Van Lottum, *Across the North Sea*, p. 150, which states that (Northern) Germany underwent a similar development as the Scandinavian countries (see previous footnote).

<sup>49</sup> Jaap R. Bruijn, "Career Patterns," in Van Royen et al., *Those Emblems*, pp. 27–8.

<sup>50</sup> For the use of changing age structure as an indicator for changes in the migrant population see Jelle van Lottum, "Migration to the Netherlands in the First Half of the Nineteenth Century: An Assessment Using the Utrecht Censuses of 1829 and 1839," *Annales de démographie historique*, 118 (2009), pp. 198–202.

Table 2. Average age of workers in the Dutch maritime labor market

	Period 1	Period 2	Difference (in years)
Native workers	33.1	34.8	1.7
Non-sedentary migrants	34.6	31.1	-3.5
Sedentary migrants	33.4	36.4	+3

Source: Database Prize Papers.

When using the average age as a litmus test for transformations in the migrant population, and indeed a possible indicator for the level of experience, it becomes evident once more that during the eighteenth century significant changes took place. Once again, there are pronounced differences between sedentary and non-sedentary migrant workers. Whereas as the age of Dutch seamen stayed relatively stable during the eighteenth century,<sup>51</sup> the average age of two migrant categories changed substantially. The data shows that in Period 1 all three groups of maritime workers have a more or less similar age structure, hovering around or slightly above the age of 33. In Period 2, however, a divergence between the two migrant categories took place. Whereas the group of non-sedentary workers transforms from being (albeit only slightly) the oldest group in period 1 to by far the youngest cohort in period 1, by the end of the eighteenth century sedentary migrants have become the group with the highest average age. Indeed, in Period 2 the age difference between the two is more than 5 years. If we follow Lucassen and Lucassen who argued that an average career of a maritime worker lasted around 12.5 years,<sup>52</sup> and if indeed, as Bruijn suggested, most maritime careers started before the age of 20, this is a substantial difference. Moreover, the shifts in the average age as shown in Table 2, do indeed suggest substantial changes in the experience level. The extent to which these changes are genuinely matched by changing skill levels is something we will look further into in the next section.

In sum, if we connect the observations of this section with the findings of the previous section, it can be (tentatively) concluded that the change from a mixed labor market where sedentary migrants were slightly in the majority, to one wherein non-sedentary migrants were dominant, was accompanied by substantial change in the migrant populations

<sup>51</sup> Confirming the relative stability of the native labor supply, see Van Lottum, "Labour Migration," p. 559.

<sup>52</sup> Lucassen and Lucassen, "Revisited," p. 63.

themselves. In other words, the labor market transformation not only seems to reflect changing migratory behavior (i.e. that migrants simply became more mobile), but as the second hypothesis suggests, it was accompanied by changes in the migrant population. The non-sedentary migrant workers of Period 1 can therefore not be equated with those in Period 2, and it appears that the same holds true for the sedentary migrants. The proof of the pudding lies, however, in the extent to which these transformations did in fact lead to changes in the skill level of migrants, which is after all the core question of this essay.

### *The quality of migrants*

It is generally understood that there are advantages to the external hiring of skilled workers. By attracting skilled workers, employers can relatively easily increase overall skill levels, and, as we have established in the first section, as a result can boost performance levels. Still, however, and this relates to the observations made in the previous sections, in the long run there are risks attached to overly relying on externally recruited skilled migrant workers. Firstly, non-sedentary migrants in particular have (by definition) a considerably less attachment to the labor market, resulting in a significantly higher turnover rate, which makes the process of hiring more complicated and (potentially) costly. Secondly, and more importantly, a too strong reliance on an external supply of skilled workers can make an economic sector much more susceptible to developments in the sending areas or labor markets elsewhere (the previously mentioned intervening opportunities). Theoretically, the latter could include a range of developments leading to a *reduction* of the labor supply and/or *changes* in its character. The causes for this could vary from the distorting effects of wars and other (national or international) conflicts, but can also comprise of changing economic opportunities in other places, thereby shifting the balance in a migrant's decision-making process away from the traditional attracting core. When this occurs, and when this change is accompanied by a reduction in the supply of *skilled* workers, the receiving economic sector has to either shift its focus to local workers with lower skill levels, or has to recruit migrant workers with fewer skills.<sup>53</sup> The result of both scenarios is, however, that overall skill levels in a sector will fall, which in turn is likely to hamper performance.

---

<sup>53</sup> As we have seen earlier, the hypothesis is that the latter happened to the Dutch Republic during the eighteenth century.



This final section aims to determine if the above-mentioned observations can be applied to the early modern international maritime labor market. Did the receiving labor markets profit from attracting migrant workers, and if so, did they remain to do so over longer periods of time? Did the Dutch Republic indeed suffer from the increased competition in the market for sailors by having to attract workers with fewer or lower skills? To provide answers to these questions, of course we need to know the skill levels of the three categories of maritime workers: native workers, sedentary migrants and non-sedentary migrants for the two periods. In the introduction, it was mentioned that in particular numeracy skills had a significant effect on labor productivity; so to determine the relative quality of migrants in the sector, the obvious indicator is indeed the numeracy levels of crews, which in turn can be approximated by the level of age heaping in the group they belong to.

In Table 3 below, numeracy levels of crews in Northwestern Europe (Scandinavia, Germany and the Dutch Republic) are shown for the different migratory categories. The numeracy skills shown in the table are expressed in percentages, reflecting the share of individuals within a group that correctly reports their age.<sup>54</sup> Unfortunately, because a relatively large sample is needed to calculate numeracy levels, it is not possible to show these levels for individual countries. However, the data in Table 3 still provides a good picture of the development of skills for the different categories of workers in the maritime sector.

Table 3. Numeracy levels among crews in Scandinavia, Germany and the Dutch Republic

	1	2
All workers	91%	94%
Native workers	90%	97%
All migrants	91%	88%
<i>Non-sedentary migrants</i>	99%	88%
<i>Sedentary migrants</i>	81%	89%

Source: Database Prize Papers

<sup>54</sup> This is the so-called alternative Whipple Index (or  $\hat{W}$ ), developed by A'Hearn et al., "Age Heaping."

Let us start by looking at the overall development of numeracy levels. As became clear in the first section, overall levels of numeracy of crews in Europe increased during the eighteenth century—a development mirroring advances made in shipping technology. This is, not surprisingly, also what we see in the “all workers” category in the top row of Table 3. The increase is, however, only marginal with a mere 3 percent increase between Periods 1 and 2. However, more diverging patterns in the development of skill levels become visible when we take a closer look at the differences in skill levels of migrant and native workers in the two periods. Firstly, Table 3 shows that in Period 1, migrants and native workers have more or less similar numeracy levels—90 and 91 percent respectively. However, when we shift to the two migrant categories, it becomes evident that there were marked differences between the two groups. While at the turn of the seventeenth century sedentary migrants appear to have much lower skill levels than their more mobile colleagues; *non*-sedentary migrants have by far the highest skill levels of workers in the maritime labor market, clearly out-performing all other groups. Based on the data for Period 1, it seems that the answer to the more general question raised in the introduction as to whether migrants in general contributed to overall skill levels of the hosting labor market, and thus to economic performance of the sector, cannot be unequivocal. Although on a whole, foreign-born workers added marginally to the skill level of the native labor pool, it becomes clear that when we distinguish between the two categories of migrants (and this is in itself another proof of the *necessity* of this distinction), the most flexible group of non-sedentary migrants in fact significantly out-performed all other groups, including local workers. As such, the “brain-gain” they produced compensated for the lesser performance of their sedentary colleagues. By attracting non-sedentary workers in Period 1, maritime employers could therefore potentially gain a great deal which the Northern European fleet in Period 1 particularly took advantage of.<sup>55</sup>

As the previous paragraphs clearly showed, the eighteenth century brought about significant change in the composition of the migrant workers, and this is no different when we look at the skill level of maritime workers. Firstly, Table 3 shows that skill levels of native workers increased more than the average level, suggesting that employers or local

---

<sup>55</sup> This illustrates the importance of making the distinction between the two migrant categories.

communities not only invested more in training, but also that they were able to keep their own workers. Secondly, when comparing the contribution of migrants and native workers to overall skill levels, it is evident that by the end of the eighteenth century the overall contribution of migrants had decreased significantly. In fact, Table 3 shows that as a result of immigration, overall skill levels in the sector fell strongly. Interestingly, whereas overall levels of sedentary migrants rose at a similar pace as the native workers, which of course implies that the former still had lower levels than the latter, the skill levels of non-sedentary workers witnessed the largest change: they dropped by more than 10 percent. This means that non-sedentary workers changed from being the most skilled group in Period 1, to the least skilled in the late eighteenth and early nineteenth centuries.

Finally, if we return to the differences in average ages as shown in Table 2, it becomes clear that the average age of a group indeed cannot be equated to a specific experience level—after all in period 1 the three categories had roughly a similar average age but diverging skill levels. Nevertheless, if we look at the group of non-sedentary migrant workers, the fact that both age as well as skill levels fall after period 1 may indeed be an indication that this group did transform from a highly skilled and specialised group of experienced sailors into a much younger, less experienced group of migrants with corresponding lower skill levels.

#### *Concluding remarks*

The strand of migration history interested in the link between pre-industrial economic development and population movement is still only in its infancy. By providing a solid quantitative framework Jan and Leo Lucasen presented an essential first step in making possible the marriage between (quantitative) economic history and (early modern) migration history. This essay aimed to take the next step by focusing on the quality of migrants (skills) instead of the quantity of them (i.e. migration rates). It is obvious that more in-depth research is necessary to fully understand the effects of population movements on pre-modern economic performance. Given the nature of the data used for this essay, it is inescapable that here key concepts such as skill and economic performance were approximated in a rather crude and imprecise manner. The extending and improving of datasets, which undoubtedly will happen in the future, will make the application of more enhanced tools possible, and will thus considerably

refine the outcome. Nevertheless, some interesting and relevant insights could be distilled from the dataset, which open new avenues for future research.

Let us, however, first return to the core question raised in the introduction: if we indeed accept the crude proxies and categorizations which the data forces us to use, did the skills of migrants contribute to overall skill levels in the receiving maritime labor markets (and thus to better economic performance)? As was already pointed out in the previous section, there is no clear cut answer to this question. What did become clear is that the period in which migrants contributed positively to overall skill levels was limited to the late seventeenth, early eighteenth century (Period 1), and was restricted to one migrant category in particular: the non-sedentary migrants. By the end of the eighteenth century (in Period 2) skill levels of all migrant categories (in particular the non-sedentary migrants!) were much lower than that of native workers, and those countries that had to rely on migrant workers saw overall skill levels decline.

The analysis made furthermore evident, supporting indirect evidence from other studies, that the Dutch maritime sector suffered most from this development. Here, a too strong reliance on foreigners was clearly felt. Throughout the eighteenth century, because of the expansion of the sector and because natural population growth had halted, a stronger demand for foreign workers grew in the Dutch maritime sector. Nevertheless, in stark contrast indeed to the earlier period, at the end of the eighteenth century immigrants *lowered* overall skill levels than anything else. The fact that, because of exogenous developments, the Dutch maritime sector had to particularly attract non-sedentary migrants, made matters only worse. This type of migrant had become considerably more important in the international maritime labor market, but counter to the beginning of the eighteenth century, when this group had by far the best skills, by the end of the century it no longer consisted of skilled (and one may suspect experienced) workers, but of young migrants, with relatively low skill levels.

To conclude, as mentioned above, this essay is only a modest next step in fully understanding the effect of skills of migrants for economic development. Nevertheless, it does provide us with some useful insights which may guide future research in this important strand of migration history. Firstly, this essay showed that defining and categorizing migration is crucial. Although this in itself is not a spectacularly new

insight,<sup>56</sup> what the analysis of the present study points out in particular is that the categorization needs to be done on a *sub-sector* level. Indeed, it became clear that the (still relatively rough) distinction between sedentary and non-sedentary migrants within the maritime sector was an essential one. These two groups had quite different characteristics, and as a further complication, these characteristics changed strongly over time. It is therefore clear that focusing on specific sectors (thus lumping together different categories of migrants) or picking out one particular sub-group, may give a skewed picture of the role of migration in the promotion of economic performance. Secondly, the changes in skill levels of migrants, or rather their falling levels, illustrate that the impact of migrants can differ strongly over time. The case of the Dutch maritime labor market showed that at the beginning of the eighteenth century, migrants (in particular non-sedentary ones) were an important driver of labor productivity, while in the latter period their role became more much more modest as a (still crucial) factor of production.

---

<sup>56</sup> Jan Lucassen and Leo Lucassen, "Migration, Migration History, History. Old Paradigms and New Perspectives," in Jan Lucassen and Leo Lucassen (eds.), *Migration, Migration History, History: Old Paradigms and New Perspectives* (Bern, 1997).