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Migration as disaster relief: Lessons from the Great Irish Famine

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Mass emigration was one key feature of the Great Irish Famine which distinguishes it from today's famines. By bringing famine victims to overseas food supplies, it undoubtedly saved many lives. Poverty traps prevented those most in need from availing of this form of relief, however. Cross-county data show that the ratio of emigration to deaths was higher in richer than in poorer counties. Another key feature of the Famine emigration was that it was irreversible. The Famine thus had a permanent impact on Ireland's population and economy, whereas typically famines only reduce population in a transitory fashion. Famine emigration spurred post-Famine emigration by eliminating poverty traps; the result was a sustained decline in the Irish population, and a convergence of living standards both within Ireland and between Ireland and the rest of the world.

1. Introduction

Mass long-distance emigration from Ireland did not begin with the Great Irish Famine. Yet the outflow was greatly swollen by that famine, and this distinguishes the Irish crisis from most historical and modern Third World famines. The migration was the product of the United States' open door policy and Ireland's being part of the United Kingdom. No similar prospect is open to modern famine-threatened economies. The distinction raises many questions about the character and scope of the famine migration and its effectiveness as a complement to, or substitute for, the lack of other forms of famine relief.

All famines induce people to move temporarily in search of food and in order to escape disease. Much of the movement is from rural areas into the towns, and when the worst is over most of the migrants usually return home (Sen 1981, pp. 98, 205; Watkins and Menken 1985, p. 652; Findley 1994). Some of the migration during the Great Irish Famine followed this pattern, as cities and bigger towns were swollen by the arrival of thousands of largely unwelcome famine migrants seeking relief or work. The huge increase between 1841 and 1851 in the percentage of Dubliners born outside of Dublin (from 27 to 39 per cent) was largely the result of the Great Famine. The inflow into the cities provoked its own problems and responses.

However, a distinction must be made between such 'local', largely temporary, movements and permanent long-distance migration. A crucial difference between the Great Irish Famine and most other famines is that for many of the Irish poor in the 1840s, mass emigration provided a welcome safety-valve. As explained in more detail later, estimates of Irish famine-induced emigration can be only approximate, but famine emigrants certainly numbered more than half of the one and a half million or so who left Ireland for good between the mid-1840s and the early 1850s. The number of Irish-born persons living abroad more than doubled in that period, and the number in the United States and Canada probably increased by more than that.

The famine migration occurred just before steamships won out over sail on the north Atlantic route. A great deal has been written about the terrible conditions and high mortality endured by Ireland's 'economic refugees' on the long crossing (e.g. Scally 1995, ch. 10), but what such accounts hide is the reality that most Irish emigrants made it safely to the other side during the famine years. Raymond Cohn (1984, 1987) has inferred migrant mortality on the passage between Europe and New York between 1836 and 1853 from a sample of contemporary passenger lists. What is most remarkable about his findings is that neither the Irish as a group nor the famine years stand out; the record of German ships in 1847 and 1848 was much worse, and curiously 1849, not 1847, produced the highest mortality overall. Cholera was presumably responsible for the high mortality in 1849. In Table 1 Irish ports and Liverpool represent Irish emigrants. While the death rate out of Liverpool was higher in 1847–8 than in 1845–6, the mean mortality rate was still less than 2 per cent. Whether the high mortality out of Irish ports in 1852 reflects a 'rogue' small sample (two ships) deserves further

Table 1. *Mortality on New-York bound ships, 1847–53.*

	(a) Irish ports		(b) Liverpool		(c) France		(d) Germany		(e) London	
Year	MR	Obs.	MR	Obs.	MR	Obs.	MR	Obs.	MR	Obs.
1845	–	–	0.76	13	0.61	8	0.96	5	3.57	1
1846	–	–	0.91	18	1.18	11	1.07	13	1.28	5
1847	1.33	5	1.73	17	0.83	6	3.77	5	1.09	3
1848	2.74	5	1.36	34	1.35	11	3.36	2	1.04	2
1849	3.36	14	3.33	47	1.74	7	1.51	8	0.56	1
1850	1.16	7	1.54	50	0.55	3	4.41	3	1.89	2
1851	0.67	16	1.28	78	0.79	12	1.05	8	0.52	8
1852	3.59	2	0.88	67	0.74	16	0.55	5	0.96	12
1853	0.62	5	1.73	54	1.30	18	1.01	27	1.23	10

Source: Ó Gráda (1995a), based on data supplied by Raymond Cohn.

Note: MR = mortality rate, Obs. = number of ships.

checking. Other data, it is true, highlight 'Black 1847', and mortality among poorer passengers who chose ships bound for Maritime and Canadian destinations (who accounted for nearly half of the Irish who crossed the Atlantic in Black '47, but only 10–15 per cent thereafter) was much higher than those bound for New York. Cohn's numbers exclude ships that sank or turned back and unrecorded deaths on board. Nor do they include deaths in the wake of arrival. Still, his results suggest that Mokyr's assessment of the overall death rate on the north Atlantic passage – 'five per cent of the total overseas migration at the most' – is not far from the truth (Mokyr 1985, pp. 267–8). In the sometimes chaotic circumstances, the outcome is an impressive achievement.

On arrival, the prospects facing the typical Irish immigrant were unskilled labour and slum accommodation in the big cities. Yet surely the fundamental comparative point to make here is that most migrants survived the passage and that many of today's famine victims would welcome such prospects in North America, Japan, or western Europe.

The power of migration to reduce famine mortality depended in part on the extent to which a poverty trap operated: the really poor, who were most vulnerable during the famine, and who most needed to emigrate, were less likely to be able to afford the voyage than their better-off neighbours. In fact, several considerations suggest that emigration may have provided a more effective safety valve than would be possible today. First, it occurred during that 'liberal interlude' when the international movement of labour was freer than ever before or since. Second, it occurred at a time when long-distance travel by sea was relatively cheap. A steerage passage from Ireland to Britain could be had for a few shillings and to one of the Canadian maritime ports – the least expensive transatlantic route – for a few pounds. True, £3 or £4 still amounted to one-third or one-half of an unskilled worker's yearly wages or a similar fraction of pre-famine income per capita (compare Mokyr 1985, p. 10), and this must have ruled out long-distance migration for the most destitute; but long-distance travel for the poorest of the poor is relatively more expensive today. Even the cheapest one-way fares from Addis Ababa, Mogadishu or Khartoum to London or New York are multiples of income per capita in Ethiopia, Somalia or Sudan, rather than fractions, as was true in the Irish case. Nonetheless, and in particular despite the possibility of very cheap fares to Britain, a poverty trap did probably prevent emigration from being an efficient form of famine relief. Section 3 tries to verify this intuition using the available cross-county data, and speculates on the contribution which emigration *did* make to reducing excess mortality during the famine.

Long-distance emigration differs from famine relief in another crucial respect: it may well be irreversible. In modern famines, food is shipped to the hungry, and when famine retreats, outside food shipments cease. In the Irish case, the hungry went to where the food was, and they never returned. The famine thus had a permanent impact on the Irish economy, whereas

other famines leave a more transitory imprint on the societies which they afflict. Section 4 deals at length with the long run demographic and economic consequences of the Irish famine emigration.

2. Poverty and population on the eve of the Famine

A few remarks first on the Great Famine's context. How did Irish incomes in the early 1840s compare with those in the Third World today? Only the crudest answer is possible. However, Irish economic historians believe that average income in Ireland just before the famine was somewhat less than half of that in Great Britain, and British economic historians estimate that incomes in Britain have increased eight- or tenfold between then and now. In the late 1980s, moreover, the average purchasing power of incomes in Ethiopia was about 2.8 per cent of Great Britain's, and in Somalia about 6.6 per cent (Summers and Heston 1991, Table 2). Taken together, these numbers indicate that Irish living standards on the eve of the Great Famine lay somewhere between those of Ethiopia and of Somalia a few years ago, though closer to Somalia's (Ó Gráda 1995).

Much of the recent discussion about the Irish economy before the famine seeks to answer the question, 'Was Malthus Right?'. In 1817, Malthus wrote, in a letter to Ricardo, that 'the land in Ireland is infinitely more peopled than in England; and to give full effect to the natural resources of the country a great part of the population should be swept away from the soil'.[1] In subsequent decades the notion that Ireland's poverty was a result of overpopulation took a firm hold in British policy-making circles.[2] Politically, the Irish famine and Irish emigration have to be viewed in the context of this debate, and when the famine struck many intellectuals regarded it as an inevitable consequence of Ireland's failure to adopt preventive checks (such as emigration, or a lowering of the fertility rate). This belief clearly influenced the British government's attitude towards famine relief during the crisis. Nonetheless, whether ecological disasters such as the havoc wreaked by the potato blight in Ireland in the 1840s or the volcanic eruption which resulted in the deaths of one third of Iceland's population in the 1780s should be regarded as Malthusian checks is a moot point. The mini-famines which affected Ireland before 1845 are much more plausible candidates.

Mokyr's (1985) classic analysis of Irish poverty on the eve of the famine exploited the county-level data offered by a range of pre-famine social and statistical surveys. The thirty-two counties provided a convenient cross-section for econometric analysis, just large enough for conventional statistical inference. To his surprise Mokyr failed to find any strong connection

[1] Cited in Mokyr (1985, p. 38).

[2] Ireland's population grew from five million *circa* 1800 to 8.2 m. in 1841 (Mokyr and Ó Gráda, 1984).

Table 2. *Descriptive statistics by province (means and standard errors; standard error in parentheses).*

Variable	Ireland	Leinster	Munster	Ulster	Connacht
DPOP4151	−0.219	−0.199	−0.253	−0.173	−0.285
	(0.115)	(0.118)	(0.107)	(0.102)	(0.089)
DPOP2141	0.202	0.144	0.259	0.183	0.292
	(0.166)	(0.155)	(0.199)	(0.103)	(0.154)
GOODH41	0.642	0.724	0.543	0.697	0.504
	(0.150)	(0.091)	(0.149)	(0.095)	(0.155)
DGOODH	0.206	0.127	0.251	0.230	0.307
	(0.116)	(0.092)	(0.100)	(0.077)	(0.114)
LIT41	0.541	0.585	0.456	0.663	0.376
	(0.139)	(0.074)	(0.088)	(0.142)	(0.082)
DLIT	0.028	0.033	0.024	0.029	0.022
	(0.037)	(0.041)	(0.036)	(0.037)	(0.027)
AVPLV	1.576	2.131	1.288	1.425	0.822
	(0.878)	(0.990)	(0.641)	(0.487)	(0.285)
SEA	0.236	0.127	0.356	0.290	0.244
	(0.425)	(0.335)	(0.482)	(0.457)	(0.435)

Source: Ó Gráda (1995a).

Note. DPOP4151 = POP51–POP41.
DPOP2141 = POP41–POP21.
POP21, POP41, POP51: population in 1821, 1841, and 1851.
GOODH41 and GOODH51: the proportion of families not relying on fourth-class housing in 1841 and 1851.
DGOODH = GOODH51–GOOD41.
LIT41 and LIT51: the proportion of the population which could at least read in 1841.
DLIT = LIT51–LIT41.
AVPLV, poor law valuation per capita divided by population in 1841.
SEA, a dummy variable set equal to one for coastal baronies.

between land hunger and living standards on the eve of the famine. That result, and the rather weak association between excess mortality during the famine and variables such as the land-labour ratio and potato consumption, suggested, controversially, a rejection of traditional Malthusian interpretations of Irish poverty before the famine. Analysis of excess mortality during the famine found roles for variables such as illiteracy and income, though other variables such as farm size and urbanization failed to yield the predicted effects (Mokyr 1985, pp. 270–4).

A finer grid, previously unexploited, is provided by baronial data.[3] The barony is an obsolete administrative unit introduced in Elizabethan times; at the time of the famine Ireland was divided into 327 of them. The correlation matrix and regression estimates discussed below are based on a subset of 305

[3] The following few paragraphs are based on Ó Gráda (1995a).

baronies, for which good data are available. The descriptive statistics in Table 2, grouped above by province, show Leinster to have been the richest province in 1841, followed by Ulster, Munster, and Connacht. Living standards are captured by indices of housing quality (the proportion of households not living in fourth-class accommodation) and literacy (the proportion of people who could at least read) in the 1841 census, and by the poor law valuation, as reported in the 1851 census, divided by the 1841 population. The poor law valuation was an official valuation of fixed property carried out for the purpose of levying rates under the Irish Poor Law of 1838. Since land dominated the poor law valuation, the last of these proxies amounts to a measure of quality-adjusted land per head.

The human cost of the famine, measured by population loss between 1841 and 1851, was greatest in Connacht and least in Ulster.[4] Table 3 correlates this measure with living standards indicators. The results suggest:

(1) A positive association between our different measures of living standards in 1841 and population change in 1841–51; in other words, the better-off a barony on the eve of the famine, the smaller the demographic impact of the famine.
(2) A negative association between improvements in living standards in 1841–51 and population change in the same decade; that is, where population decline was greatest is, broadly speaking, where the rise in literacy and housing quality was greatest.
(3) A negative association between population growth before the famine (1821–41) and living standards on the eve of the famine.
(4) Some sign of a convergence in living standards across counties. The negative correlations between our proxies for living standards in 1841 and changes in living standards during the famine decade indicate that initially poorer counties saw greater improvements in their standard of living.

Only one of the measures of living standards on the eve of the famine (the Poor Law valuation per head) comes close to capturing Mokyr's land-based proxies for population pressure. Still, the findings reported in Table 3 imply that the famine struck hardest in the poorest baronies, and that the increase in living standards that followed was greatest where population loss was greatest. Moreover, population growth before the famine was associated with poverty in 1841. Unfortunately, we lack data at the baronial level on changes in living standards in the decades before 1841, and so we cannot test whether pre-famine population growth was associated with impoverishment across baronies.

Regression analysis of population change during the famine refines these findings somewhat. Our focus is on the effect of living standards on the eve

[4] Mokyr used excess mortality rates, but these cannot be calculated at the baronial level.

Table 3. *Population and living standards (correlation coefficients).*

	DPOP4151	DPOP2141	AVPLV	GOODH	LIT41	DGOODH	DLIT
DPOP4151	1.000						
DPOP2141	0.072	1.000					
AVPLV	0.365	−0.201	1.000				
GOODH41	0.414	−0.281	0.430	1.000			
LIT41	0.405	−0.262	0.429	0.638	1.000		
DGOODH	−0.285	0.242	−0.518	−0.786	−0.391	1.000	
DLIT	−0.240	−0.082	0.077	−0.028	−0.127	−0.036	1.000

Source: See text.

Table 4. *Accounting for population change during the Famine.*

	[1]	[2]	[3]	[4]	[5]	[6]
CONSTANT	−0.430	−0.450	−0.313	−0.235	−0.451	−0.484
	(−17.66)	(−17.06)	(−23.84)	(−22.49)	(−17.63)	(−16.77)
LIT41	0.363					
	(8.57)					
GOODH41		0.338			0.258	0.291
		(8.63)			(6.17)	(6.95)
AVPLV			0.051		0.032	0.035
			(7.42)		(4.53)	(4.92)
DPOP2141				0.029		0.132
				(0.72)		(3.77)
SEA	0.065	0.061	0.059	0.045	0.065	0.057
	(4.65)	(4.43)	(4.15)	(2.87)	(4.87)	(4.33)
F	42.5	43.1	33.1	4.9	37.4	32.8
R^2	0.220	0.222	0.180	0.032	0.272	0.304

Source: See text.

Note: The dependent variable throughout is DPOP4151, *t*-statistics are in parentheses.

of the famine on the gravity of the famine at baronial level. Table 4 reports the results; the dependent variable throughout is DPOP4151. Regressions [1] – [3] describe the explanatory power of GOODH, AVPLV, and LIT on DPOP4151, controlling for coastal location. These proxies are not perfect correlates, and including two of them in [4] increases explanatory power. It is interesting to note that adding DPOP2141 fails to support the belief that counties with higher population growth before the famine had higher population declines during the 1840s. By and large, high population growth before the famine meant high population growth in its wake. In general baronies with a sea boundary fared better, after controlling for poverty on the eve of the famine, suggesting that access to fish, sea-shells, seaweed and sea-borne relief mattered during the crisis.

The key point to take from the Table is however that the poorest baronies were the worst hit during the famine. Indeed, one does not need to delve into the baronial records to reach this conclusion. Regressing famine-induced or excess mortality rates (by county) against wages in 1836 yields the following result (both variables are in log form):[5]

$$\underset{\quad\ (4.45)\ \ (-7.98)}{\text{LDEATH} = 2.84 - 2.24^{*}\,\text{LWAGE}} \qquad \underset{F(1,29) = 63.62}{R^2 = 0.69} \qquad (1)$$

Pre-famine poverty was clearly associated with suffering during the famine. But did emigration provide a safety valve, in the sense that death rates were lower where emigration rates were higher? And to what extent did poverty traps prevent emigration from reducing death rates in the poorest counties? Was emigration higher from poor counties, as standard migration models suggest, or was it the rich who managed to escape to the New World? We turn to these questions in the next section.

3. Poverty, emigration, and death

Welfare assessments of Irish emigration have often dwelt on the human capital characteristics of those who left relative to those who stayed behind (Mokyr and Ó Gráda 1982, Nicholas and Shergold 1987). It is certainly true that emigration in normal times was age-selective: young single adults had the most to gain from emigrating, and they were disproportionately represented in the flow. This implied a 'life cycle' loss for Ireland, and a 'life cycle' gain for the New World and Great Britain, as Ireland lost the productive capacity of children she had reared, and the New World and Great Britain gained 'instant adults'.

Was emigration selective in other ways as well? Both theory and the available evidence are inconclusive. If poor countries have a higher ratio of unskilled labour to skilled labour than rich countries, then standard Heckscher-Ohlin logic suggests that the unskilled should have the greater incentive to migrate. Taking into account the fixed cost of migration makes the outcome uncertain, however, as skilled emigrants may gain more in *absolute* terms. If emigrants' skills are initially unobservable to foreign employers, or there are segmented labour markets in the host country, with immigrants consigned to low-level jobs, then unskilled workers may again have a greater incentive to migrate (Katz and Stark 1989). The evidence on the skill composition of Irish emigrants is ambiguous.

What about the quality of emigrants within given skill categories? *A priori* reasoning suggests that in normal times, workers with 'drive' are more likely to emigrate than the more risk-averse, or the more leisure-prone (O'Rourke

[5] The wage data were generously provided by Liam Kennedy. The excess mortality data are as described in Section 3. County Dublin was omitted from the regression, for reasons given in Section 3.

1992). Of course, this intuition is impossible to test, although there is no shortage of anecdotal evidence. During the famine when emigration was largely determined by push factors, a lower quality of emigrant might be expected as it was the more vulnerable who fled the crisis. There is some direct evidence that this was in fact the case. In March 1847, in a frequently cited passage (e.g. Handlin 1941, p. 55), the *Cork Examiner* noted that 'the emigrants of this year are not like those of former ones; they are now actually *running away* from fever and disease and hunger, with money scarcely sufficient to pay passage for and find food for the voyage'. The analysis of lists of New York-bound Irish emigrants offers some clues here (Glazier *et al.* 1989, Ó Gráda 1983). First, it suggests a sharp drop in the share of unaccompanied passengers during the famine. This, and the accompanying shift in the age composition of the migration, reflects the more family-oriented character of famine migration. The share of females in the migrant outflow was largely unaffected by the famine, however.[6] Occupational data suggest little change either: both before and during the famine unskilled categories such as labourers and servants accounted for over three-fifths of the total. But another important difference is that the shares of the worst-hit provinces of Connacht and Munster rose significantly (compare Handlin 1941, p. 56).

The increase in the proportion of children and older people means a lower 'life-cycle' gain from immigration to host countries. The occupational spread suggests no deterioration, however. Other clues about the relative 'quality' of the famine migrants are scarce. We may examine the numeracy, or what Mokyr (1985, p. 244) has called the 'quantitative sophistication' of the migrants by calculating the degree of age-heaping in the passenger lists. Age-heaping refers to the tendency for responses to questions about age to concentrate on rounded estimates, and in particular on the nearest zero (20, 30 and so on). Table 5 reports the outcome of an analysis of age-heaping in Boston passenger lists in 1822–39, and in New York passenger lists just before and during the famine. It relies on the simplest index of age-heaping: the ratio of migrants reporting their ages at 20, 30, and 40 to those reporting ages of 20–4, 30–4, and 40–4 years, respectively. The value of this index can range from 0.20 (no age-heaping) to 1.00 (complete age-heaping). The trends in each category in Table 5 show little difference between 1820–39 and 1846–9 except in the 20–4 year category, where a deterioration is indicated. Yet there is little sign in the passenger lists of a drop in emigrant quality during the famine period.

The evidence above suggests that the famine emigration was qualitatively

[6] A remarkable feature of the famine emigration is that women were about as likely as men to 'better themselves' through leaving, a pattern that has endured in Ireland until today. In the Third World today crisis migrations typically involve adult males; some abandon their families, but most offer a crucial lifeline in terms of remittances (Drèze and Sen 1989: 77–9).

Table 5. *Age-heaping indices 1846–9.*

	1820–39	1846*	1847**	1848^	1849***
Age					
20–4	0.27	0.50	0.33	0.40	0.47
30–4	0.67	0.69	0.62	0.63	0.78
40–4	0.83	0.78	0.79	0.82	0.87

Source: The 1822–39 estimates are from Ó Gráda (1983: 128); those for 1846–9 are derived from data in Glazier (1984).
(*) Jan-March, (**) July, (^) Jan, (***) Jan 1–Jan 20

different than emigration in normal times: it was less age-selective and the migrants were lower skilled. However, the migrants were not the very poorest or the worst affected by the potato failure. Most of them relied on their own resources in funding their emigration; perhaps fifty thousand of nearly a million were assisted by landlords or the state (MacDonagh 1956, p. 335, Fitzpatrick 1984, p. 20). This implies that the very poorest, those with no savings or goodwill to capitalize on, could not travel. The implication is that the receiving countries were not getting the paupers.

Though data on the socio-economic backgrounds of those who died and those who emigrated are lacking, it seems fair to assume that the latter were mostly people of some modest means. For most of the landless poor, with no savings or compensation for eviction to fall back on, the cost of a passage to America would have been too high. An account in the *Freeman's Journal* (8 May 1847) of a Roscommon woman who had sought refuge for herself and six children in a night asylum in Dublin, is interesting in this respect. She had been put into custody by the keeper for failing to account for a large sum of money in her possession. The magistrate evinced surprise at the family's condition, 'while she had so much money about her'. The following is the woman's account:

> She lived in the county Roscommon, and her husband held about ten acres of land, but he died last Shrovetide; she had no means of sowing a crop, and she gave up the place to a collector of poor rate, who gave her £15 for it; she got £5 for a mare, and £4 for a cow, 10s. for a cart and harrow, and more money for other things, and this made up all she had; she was about going to America, but she would not be taken with her children for less than £27.

When her eldest boy, a thirteen-year-old, corroborated her story, the magistrate deemed it 'evidently true', and discharged her.

To what extent can we generalise from stories such as this one? One approach is to turn yet again to the cross-section evidence, and this first requires us to compute emigration rates across counties. Easier said than

done! True, we have censal estimates of population in 1831, 1841, and 1851, and we have Cousens' (1960) estimates of excess mortality by county. The latter are problematic, alas. Cousens gave a national total for excess mortality of only 800,000, whereas more recent estimates have opted for a higher figure of one million. But not only is Cousens' aggregate too low; his strategy of combining recorded deaths in institutions and deaths in households as retrospectively recorded in 1851 lends an unknown bias to the cross-county variation in his data. On the one hand, emigrant families were not around in 1851 to report earlier deaths in their households. On the other, under-reporting is likely to have been greater in poorer counties. Nevertheless, the exercise which follows relies on Cousens' county estimates of excess mortality, scaled up uniformly by 25 per cent.

To derive an estimate of emigration between 1841 and 1851, it is necessary to guess what the 1851 population would have been in the absence of the famine. A reasonable guess might be that the national population would have grown at 0.5 per cent per annum between 1841 and 1851, had the potato blight not intervened.[7] However, population growth would not have been uniform across counties. Between 1831 and 1841, population growth per annum ranged from a high of 1.1 per cent in Kerry to a low of 0 per cent in Derry. This excludes Dublin where remarkably, the official figures show population *shrinking* at 0.1 per cent per annum! Because Dublin's unusual demographic experience (it experienced substantial immigration during the famine years) makes it a substantial outlier, it is not included in the correlation exercises which follow.

We therefore adopt the expedient approach of first assuming that county populations would have continued to grow between 1841 and 1851 at the same rate as they had between 1831 and 1841. This implied a counterfactual national population in 1851 of just over 8.6 m. We then scaled down each county population estimate for 1851, so that the national total was just *under* 8.6 m., as would have been the case if the national population growth rate was 0.5 per cent per annum.

This procedure gave county estimates of counterfactual, 'no-famine' populations in 1851. From these totals we subtracted the actual 1851 population figures. The difference was taken to be due to either emigration or excess mortality. Subtracting the adjusted excess mortality figures thus gave an estimate of excess emigration by county during the decade, i.e. of emigration above pre-famine rates. The implied provincial emigration and death rates are given in Table 6. The numbers are consistent with qualitative accounts: Connacht was most severely affected by the potato blight, followed closely by Munster, with Leinster and Ulster being the least affected. Interestingly, the data show Leinster's death rate being higher than Ulster's (as expected), but Ulster's emigration rates being higher than

[7] The population had grown at just over this rate during the previous decade.

Table 6. *Provincial excess mortality and emigration rates, 1841–51.*

	Population	Emigration	Deaths	Emigration rate (%)	Death rate (%)
Ulster	2,386,373	290,970	184,123	12.2	7.7
Munster	2,396,161	332,936	382,951	13.9	16.0
Leinster	1,973,731	171,287	193,397	8.7	9.8
Connaught	1,418,859	245,624	239,529	17.3	16.9
Ireland	8,175,124	1,040,816	1,000,000	12.7	12.2

Source: See text.

Leinster's. Otherwise, the ranking of provinces by death rates is the same as that by emigration rates.

However, the correlation between emigration and death rates is not strong across counties, just 0.147. Consequently, counties such as Clare and Galway, with high death rates, also tended to have a low ratio of emigration to deaths (Figure 1). There is a strong negative correlation between these variables (-0.605), consistent with the notion that it was not the poorest who emigrated. To explore this possibility further, county-level emigration and death rates are correlated with a number of variables indicating living standards and vulnerability on the eve of the famine.

Table 7 gives the results. Not surprisingly, counties with low wages, a high dependency on the potato (as measured by 1841 acres per capita) and a large drop in the potato acreage, had higher death and emigration rates (Figure 2). However, the relationship between potato dependency and emigration was almost non-existent. Interestingly, the relationship between wages and death rates was far stronger than the link between death rates and

Table 7. *Deaths, emigration, wages and potatoes (correlation coefficients)*

	Death rates	Emigration rates	Emigration/deaths
Wages	−0.820	−0.353	0.383
Potato Dependency	0.333	0.038	−0.215
Decline in potato acreage 1845–7	0.374	0.423	−0.038
Decline in potato acreage 1845–8	0.456	0.442	−0.055

Note: The wage data are for 1836, and were obtained from Liam Kennedy. Potato dependency was defined as the potato acreage per capita in 1845. Potato data are from Mokyr (1981) and Ó Gráda (1995a).

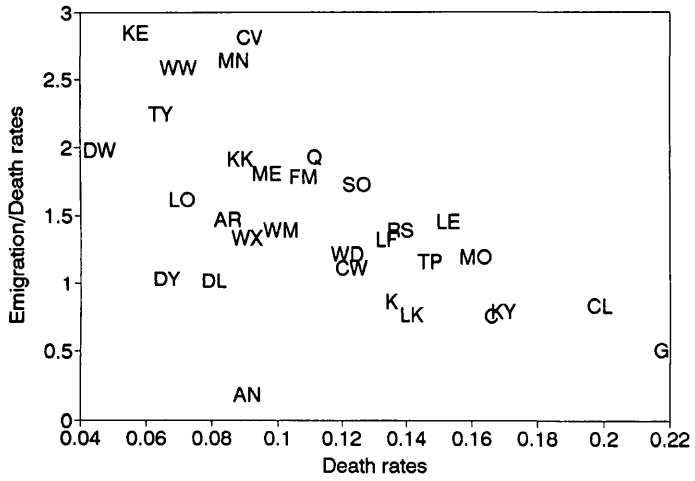

Figure 1. *Famine deaths and emigration.*

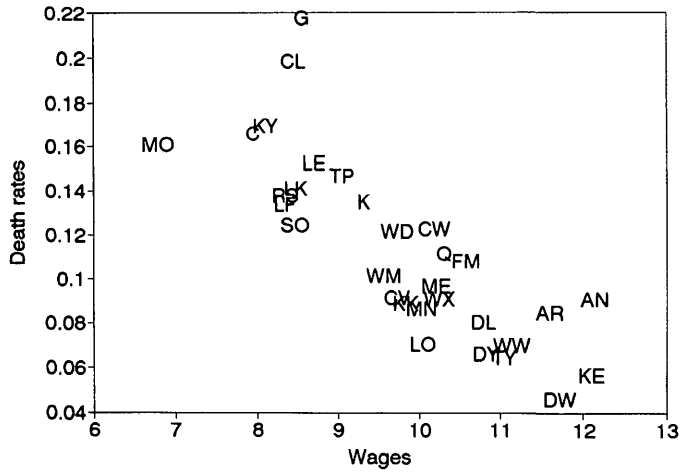

Figure 2. *Wages and death rates.*

Key to Figures 1–3

County	*Symbol*	*County*	*Symbol*	*County*	*Symbol*
Leinster		*Munster*		Derry	DY
Carlow	CW	Clare	CL	Donegal	DL
Kildare	KE	Cork	C	Down	DW
Kilkenny	KK	Kerry	KY	Fermanagh	FM
King's County	K	Limerick	LK	Monaghan	MN
Longford	LF	Tipperary	TP	Tyrone	TY
Louth	LO	Waterford	WD	*Connacht*	
Meath	ME	*Ulster*		Galway	G
Queen's County	Q			Leitrim	LE
Westmeath	W	Antrim	AN	Mayo	MO
Wexford	WX	Armagh	AR	Roscommon	RS
Wicklow	WW	Cavan	CV	Sligo	SO

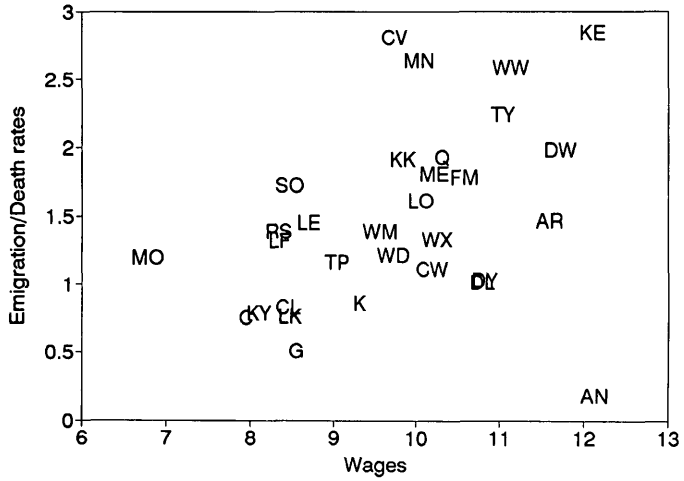

Figure 3. *Emigration, deaths and wages.*

any of the potato variables.[8] Once again, in richer counties, the ratio of emigration to deaths was higher than in poor counties, again supporting the intuition that the poorest died rather than emigrated (Figure 3).[9]

Emigration was thus an inefficient form of famine relief: it did not help those most at risk. Nonetheless, without the emigration option, famine mortality would surely have been higher, with more people competing for scarce food supplies. Unfortunately, it is impossible to quantify the magnitude of this effect.[10] It is unlikely, though not inconceivable, that the absence of distant outlets for emigration would have increased mortality by more than the number of frustrated would-be emigrants. A more plausible outcome would be the death of a fraction of those forced to remain. In

[8] Adding potato variables to equation (1) above adds nothing to the regression: these variables are completely swamped by the wage variable, are completely insignificant, and in some cases have the 'wrong' sign.

[9] As a partial check on the sensitivity of our results to the emigration estimates, we also calculated emigration rates on the assumption that 200,000 births were averted during the crisis. These averted births have to be subtracted from our emigration estimates; the averted births were allocated between counties in proportion to deaths, and emigration figures were again calculated as residuals. On these assumptions, the correlation between emigration and deaths was −0.015, and the correlation between emigration and the emigration/death ratio was 0.726. Emigration was more weakly correlated with the explanatory variables in Table 11 than before; otherwise the results were unaffected.

[10] We ran the regression in equation (1), adding the log of the emigration rate to the right hand side. Controlling for wages, the partial impact of emigration on death rates was indeed negative, although the elasticity was low (0.1) and the coefficient only weakly significant (a *t*-ratio of −1.13). In addition, there is clearly a great deal of simultaneity in the data, which is why we do not wish to emphasise this analysis in the text.

addition, some migration would be diverted to the already crowded cities of Ireland and Great Britain. The negative externalities through the spread of disease and misery resulting from such migration are impossible to calculate, but should be borne in mind.[11]

4. The permanent impact of the famine emigration

Malthusian theory traditionally assigned an important role to famines in helping to regulate population. In the absence of the preventive check, population would grow to the point where positive checks such as higher infant mortality or disease became inevitable. If these failed, famine provided the ultimate sanction. As mentioned earlier, this attitude informed much contemporary British opinion regarding 19th century Ireland. Ireland's poverty was due to overpopulation; famine, while regrettable, was inevitable.

In an important paper, Susan Watkins and Jane Menken (1985) argue that, contrary to Malthusian doctrine, famines only have limited long run demographic effects. Surveying historical and contemporary famines, they conclude that mortality does not rise by as much, and fertility does not fall by as much, during famines as is commonly thought; moreover, severe famines have been relatively infrequent. The heart of their paper is a simulation of the long run demographic consequences of famine using demographic parameters typical of Asian society ('high mortality, early and virtually universal marriage, and relatively moderate fertility', p. 658). The authors allow for excess mortality rates during famines which vary by age cohort, and trace out the implications for the long run evolution of a population. The striking finding is that even severe famines do not reduce population size in the long run (except in a counterfactual sense). For example, in a population with an initial growth rate of 0.5 per cent per annum, which experiences a famine involving mortality rates 110 per cent higher than normal, and birth rates one-third lower than normal, for a period of two years, population returns to its original level less than twelve years after the crisis (p. 660). However, if mortality rates are 150 per cent above average for five years, it takes 50 years for the population to regain its original level.

The point can be illustrated by the 'no emigration' line in Figure 4, which takes the Irish population on the eve of the famine as 8.5 m. Excess mortality was one million, and was largely over by 1851. Imagine that birth rates declined enough during the crisis to reduce population growth, net of excess

[11] Ó Gráda (1995b) shows that mortality rates increased in Dublin during the famine, following the influx of immigrants from the countryside. For an analysis of how the famine emigration affected Lancashire, see Neal (1995).

mortality, to zero during the six years; and imagine a world without emigration. Assume further (and implausibly) that excess mortality would have remained the same in the absence of emigration. Population would then have been 7.5 m. in 1851. *If* excess mortality had affected all age cohorts equally, population growth would simply have resumed at its pre-1845 rate in 1851. At this rate, population would have recovered by 1877, 32 years after the onset of the crisis.

Moreover, if one allows for excess mortality to vary by age cohort, as Watkins and Menken do, and as was surely the case, then it would have taken even less time for the Irish population to recover. The reason is simple, and is highlighted by Watkins' and Menken's simulations. During famines, the old and the young are more likely to die than adults of child-bearing age: the share of the latter group in the total population thus increases. In reality, therefore, after famines have passed, given age-specific fertility rates translate into higher birth rates for the population as a whole; and this implies a higher population growth rate post-famine than pre-famine. This age cohort effect alone can make a big difference to the time to recovery. In the four experiments presented in their Table 3, not allowing for excess mortality to vary by age group increases the time to recovery by 5, 50, 66 and 69 per cent respectively.

Furthermore, these simulations assume that age-specific fertility and mortality rates return to normal after the famine; whereas unless famine forces a shift in preferences, mortality rates should decline and fertility rates increase as Malthusian pressures ease. (There should have been greater scope for this in post-famine Ireland than in the Watkins-Menken simulations, which assume that everyone was already married before the crisis.) Again, allowing for these typical responses to famines would speed up post-famine population growth rates, and lower the time to recovery; as would relaxing the assumption that the population growth rate, net of excess mortality, fell to zero during the crisis. Taking all these factors into account, Ireland's population might have recovered in 15 or 20 years, rather than the 32 years suggested by Figure 4, had it behaved in a 'normal' fashion. The one, important, consideration which works in the opposite direction is the assumption in this no-emigration counterfactual that excess mortality would have been the same in the absence of famine emigration. Presumably excess mortality would in fact have exceeded one million in this case, as the previous section suggested.

In any event, the general point is clear enough. In economies without labour market links to the rest of the world, famines do not generally result in long-lasting population declines. Figure 4 tells us immediately that Ireland was a very different case indeed. Far from returning gradually to pre-famine levels, Ireland's population actually entered into a steady decline, which in the 26 counties of the present-day Republic of Ireland persisted until 1961. The Great Famine's effects on Ireland's population were clearly

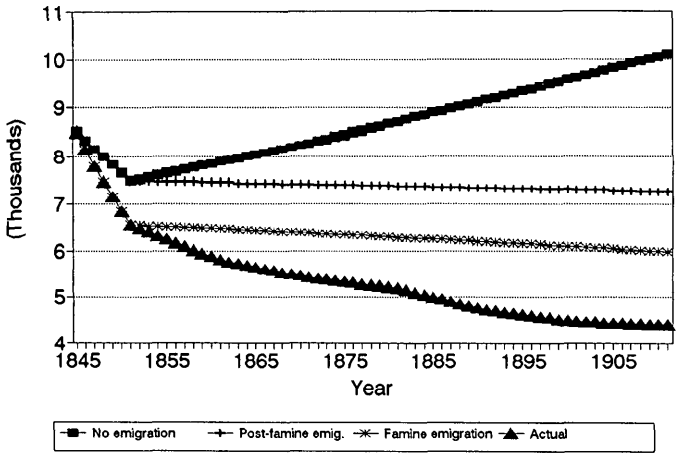

Figure 4. *Actual and hypothetical population 1845–1911 (thousands).*

permanent, rather than transitory, and emigration holds the key to understanding this.[12]

Clearly the emigration which took place during the famine – about one million people left – contributed directly to long run population loss; but it is the sustained emigration which followed that explains the perverse Irish population decline. However, this post-famine emigration was intimately linked to the famine exodus, for at least two reasons.

First, by increasing land-labour ratios the famine and its associated emigration eliminated the poverty trap which had prevented people from the poorer parts of Ireland from emigrating before 1845. This argument is consistent with the general view of European emigration presented by Hatton and Williamson (1994). They note that emigration rates rise during the course of development, before falling again, despite the fact that the initial development should have made emigration less attractive. The explanation is straightforward: initially potential migrants were too poor to afford the costs of migration. With growth, this poverty trap was overcome; path dependence ensured that an initial burst of emigration would lead to ever-increasing levels of emigration; only eventually would rising wages choke off the demand for emigration.

In Ireland, many victims of this poverty trap died during the famine, while many of those who were slightly better off were forced to emigrate. These developments of course implied higher wages post-famine; furthermore, relatives and friends in the US or elsewhere could now make information

[12] There are other reasons why the famine had permanent effects on the Irish economy: for example, the potato blight persisted, reducing potato yields and increasing their variability for decades (Solar 1989). This amounted to a negative productivity shock that reduced the demand for agricultural labour (O'Rourke 1994). Nonetheless, it is the pull of overseas labour markets rather than the push of domestic conditions that explains post-famine Irish emigration (O'Rourke 1991).

and money available to potential emigrants. Emigration became available to all, and Irish living standards began to increase rapidly. Boyer *et al.* (1994) estimate that real agricultural wages doubled between 1860 and 1913; moreover Irish wages converged on their British counterparts. Williamson (1995) estimates that unskilled building wages were 51 per cent as high in Ireland as in Britain in 1852, but 93 per cent as high in 1904, a finding echoed by Boyer *et al.*

To check the notion that the famine helped overcome the poverty traps which had constrained pre-famine emigration, we examined the inter-county variation in net migration rates before and after the famine. Since reliable net migration statistics are lacking, we proxied migration by age-cohort depletion: we chose the reduction in the 5–15-year-old age-cohort between 1821 and 1841, 1851 and 1871, and 1871 and 1891. We then correlated the loss across counties with estimates of the unskilled wage, and also calculated the elasticity of the migration rate with respect to the wage. The outcome, seen in Table 8 below, suggests a significant difference

Table 8. *Wages and emigration before and after the Famine.*

Year	Mean wage	Wage–emigration correlation	Elasticity of emigration w.r.t. wages
1829	61.09	−0.049	−0.08
1835	54.09	−0.023	−0.03
1836a	9.88	−0.202	−0.14
1836b	6.80	0.194	0.10
1850	57.69	−0.547	−0.66
1860	84.25	−0.397	−0.48
1860a	83.25	−0.613	−0.95
1870	94.38	−0.216	−0.42
1880	108.09	−0.489	−0.63

Source: The data are mostly taken from Bowley (1899). 1860a replaces the Bowley numbers for Waterford and Roscommon by more plausible estimates (i.e. 72d in each case). 1836a is a weighted estimate of a male labourer's daily summer wage, without food, derived from evidence to the Poor Inquiry; 1836b excludes diet. We are grateful to Liam Kennedy for these last estimates.

between pre- and post-famine patterns. Before the famine, emigration was only weakly correlated with wages, and the wage-emigration elasticity was low, suggesting that it was not necessarily the poorest who were emigrating. After the famine, wages and emigration were strongly and negatively correlated, and wage-emigration elasticities were high.[13] Convergence on living standards overseas was accompanied by internal convergence: the

[13] Hatton and Williamson (1993) also find that it was the poorest who left after the famine, in a multiple regression framework.

coefficient of variation across counties of wages was 0.175 in 1835, 0.154 in 1836, 0.156 in 1850, 0.121 in 1860, 0.109 in 1870, 0.166 in 1880, 0.116 in 1893, and 0.075 in 1911. The 1880 figure may be an aberration; that observation apart, the picture is one of steady convergence after the famine.[14]

The second way in which the famine exodus contributed to subsequent emigration is that emigration directly begets further emigration: there is a powerful path dependency at work here. This point is illustrated by the econometric work of Hatton and Williamson (1993), who estimate a time series model of Irish emigration over the period 1877–1913. The micro-foundations of the model assume utility-maximisation and risk-aversion on the part of migrants. Thus, while relative wages are key for long run migration, the timing of migration will be largely influenced by unemployment rates. Moreover, risk aversion implies that unemployment rates and relative wages should be entered separately into the equation, in contrast to the expected wage approach of Todaro (1969) and others. Finally, the model includes a migrant stock term, to capture the 'friends and relatives' effect: prior migration makes current migration less costly (in terms of places to stay, flows of information, and remittances) and thus more common. This of course implies path dependence. The model estimated is:

$$\begin{aligned} M/P_t = {} & \alpha_0 + \alpha_1 \Delta\log(EF)_t + \alpha_2 \Delta\log(EH)_t + \alpha_3 \Delta\log(W)_t \\ & + \alpha_4 \log(EF)_{t-1} + \alpha_5 \log(EH)_{t-1} + \alpha_6 \log(W)_{t-1} \\ & + \alpha_7 (MS/P)_t + \alpha_8 (M/P)_{t-1} \end{aligned} \qquad (2)$$

where M/P is the emigration rate (emigrants divided by population), EF and EH are the foreign and home employment rates, W is the ratio of foreign to domestic wages, and MS is the stock of previous migrants.

Hatton and Williamson find that emigration responded strongly to relative wages, and to the foreign unemployment rate. More importantly for this paper, they also find strong evidence of path-dependence: after controlling for the influence of wages and employment, for every 1000 previous migrants, an extra 41 were attracted overseas each year. Of course, these results were derived for a much later time period, but they are useful for illustrative purposes in thinking about the long run impact of the famine emigration.

The famine directly led to at least one million people emigrating. The Hatton-Williamson results imply that this shock alone might have implied as many as 41,000 extra migrants per annum. The Irish population was roughly 6.5 m. in 1851; the path dependence effect alone might have boosted

[14] The wage data are taken from Bowley (1899) and Fitzpatrick (1980), except for 1836, for which we thank Liam Kennedy. Bowley's 1870 estimates for Clare and Roscommon were replaced by more plausible numbers.

the emigration rate by 6 (i.e. 41,000 divided by 6,500) per thousand per annum, which is in fact the amount by which average post-famine emigration rates (13) exceeded pre-famine rates (7).[15] The famine was crucial to subsequent high emigration rates.

This extra post-famine emigration is by itself sufficient, in an accounting sense, to explain the failure of Ireland's population to revert to its original level (in fact low birth rates worked in the same direction). The 'post-famine emigration' line in Figure 4 assumes, as does the 'no emigration' line, that birth and death rates on their own (combined with 'normal', pre-famine emigration rates) would have led to the population growing at 0.5 per cent per annum. However, it now lets excess emigration take place at the rate of 41,000 per year, the figure suggested by the Hatton-Williamson exercise. This emigration places a sufficient drag on the overall population to ensure that population continues to decline after 1851, rather than to increase to its original level. Allowing both for this level of post-famine emigration, and the famine emigration itself (the 'famine emigration' line in Figure 4) brings us a lot closer to what actually happened to the Irish population. Once we take account of the famine exodus, and the subsequent emigration which it spawned, the long run evolution of Ireland's population, so different from the Watkins-Menken norm, no longer seems perverse.

Furthermore, the assumption of Watkins and Menken that birth rates would revert to their pre-famine norm, or even increase, after the crisis, did not apply in Ireland. The lack of civil registration and the likely under-enumeration of very young children in the census rule out firm estimates of post-famine birth rates. However, the drop in the proportion of children aged 0–4 years in the total population from 12.6 per cent in 1841, to 12.0 per cent in 1861, and 11.1 per cent in 1881 is indicative of a *decline* in birth rates. The rise in the percentage of never-married Irishwomen aged 45–54 years from 12.5 per cent in 1841 to 14.3 per cent in 1861 and 17.1 per cent in 1881 is corroborative.[16] And this helps further explain the drop in Ireland's population.

In conclusion, the famine does appear to have put an end to Irish 'overpopulation', in the sense that most survivors experienced higher and increasing living standards. However, this is in large part due to the mass emigration associated with the famine and its aftermath: Boyer *et al.* (1994) conclude that perhaps half of the Irish convergence on Britain can be explained by Irish emigration, while O'Rourke and Williamson (1997) argue that the *entire* Irish convergence on Britain and America can be explained by mass migration, a dubious distinction Ireland shares with Italy. Watkins' and Menken's work is a reminder that in the absence of emigration,

[15] For the pre-famine figure, see Mokyr (1985, p. 35); for the post-famine period, see Hatton and Williamson (1993, p. 575).

[16] Although age-specific emigration makes such percentages difficult to interpret.

Ireland's population might well have recovered from the crisis, however slowly, as has been the experience elsewhere.[17]

5. Conclusions

Emigration was by no means an ideal substitute for other forms of famine relief in the 1840s. A million people still perished. Because only a tiny fraction of the emigration was state-assisted or landlord-assisted, those who could afford to emigrate were not those at greatest immediate risk from starvation. The timing of the migration – heavier after than during Black '47 – also suggests that it was not ideally tailored to relieve the worst-hit. In the words of Robert Murray, general manager of the Provincial Bank of Ireland, in 1847, 'the best go, the worst remain'.[18] He might have added, to die!

Still, emigration reduced famine mortality. Moreover, few of the emigrants returned when the crisis had passed, suggesting an asymmetry with other forms of disaster relief. While emigration did not target the poor as effectively as soup-kitchens or the public works, unlike them, its effect went well beyond mere crisis-management. The famine emigration has often been seen as one of the great tragedies in Irish history, and in human terms this is of course correct. Nonetheless, in the long run this emigration played an important role in increasing the living standards of those who stayed behind.

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[17] For further analysis of the connection between emigration and long-run demographic trends in Ireland, see Guinnane (1997).

[18] Cited in Black (1960), p. 229.

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