Wages and Human Capital in Finance: International Evidence, 1970–2005*

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Abstract

We study the allocation and compensation of human capital in the finance industry in a set of developed economies in 1970–2005. Skill intensity and wages generally increase in finance relative to the rest of the economy—but not in all countries and to varying degrees. Financial deregulation and financial globalization, both statutory and de facto, are the most important factors raising relative wages and skill intensity in finance. Differential investment in information and communication technology in finance occurs only in a deregulated environment, and does not have independent explanatory power. High finance wages attract skilled immigration to finance, raising concerns for "brain drain".

JEL classifications: G2, J2, J3.

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1 Introduction

High wages in finance have become a topic of public and academic attention following the 2007–2009 financial crisis, both in the United States and Europe. The crisis sparked a growing interest in understanding what explains wages in finance, due to the perceived centrality of finance as the cause, catalyst or propagator of the current economic downturn. There are three main reasons for this. First, given that high wages in finance persist even after the crisis begs the question whether social returns are dwarfed by private returns to workers in finance. To the extent that high wages in finance reflect short-term high power incentives, these incentives may not be aligned with long-term social interests. Second, socially inefficient high wages in finance may draw talent from other more productive sectors of the economy. Third, high wages in finance contribute significantly to overall inequality.

We compare the financial sector to the rest of the nonfarm private sector in a set of 22 industrialized and transition economies in 1970–2005, and document a set of facts. First, there is significant heterogeneity in the trends of relative wages in finance: Half of the countries see increases, while the remainder are split between decreases and mixed trends. Second, these trends are not explained by broad changes in skill composition; within-group relative wage changes in finance explain almost all of the variation in finance relative wages, in particular, relative skilled wages in finance. A benchmark wage series based on observed changes in skill composition and time-varying returns to skill does not track well the finance relative wage in most countries, both in levels and change over time. As a result, the evolution of finance excess wages, defined as the difference between the finance relative wage and the benchmark series, is very similar to the evolution of relative wages in finance.[1] Third, about half of the countries in the sample exhibit increasing relative skill intensity in finance. However, the pattern of increases and their magnitudes are not commensurate with changes in relative wages in finance, which is consistent with the second finding. We also show that finance can explain a large part of changes in overall inequality across countries in our sample.

We then investigate four potential explanations for the rise in relative wages and relative skill intensity in finance: Technology, financial globalization, expansion of domestic credit, and financial deregulation.

Information and communication technology (ICT) may drive demand for skill because, as we document, finance increased its relative intensity of ICT and, as we estimate, ICT is relatively more

[1] Célérier and Vallée (2013) estimate that the finance wage premium in France is driven by higher private returns to talent in finance. This shows up in our data as high skilled finance relative wages.

complementary to skill in finance. Autor, Levy, and Murnane (2002) document how computerization affects demand for labor and job complexity in two large banks.[2] In the presence of unobserved heterogeneity in the ability to exploit ICT, relative ICT intensity can help explain within-group changes in relative wages in finance, as Célérier and Vallée (2013) also conjecture.

Both financial globalization and domestic demand for credit can be skill biased, i.e. increase demand for skill and drive up wages in finance, in particular of skilled workers. Serving investors from abroad and managing investments overseas requires specific skills. If supply of such skills is not perfectly elastic, then a more globalized financial system will drive up wages of those who possess these skills. Similarly, when demand for credit is high, it may be necessary to employ more highly skilled workers to screen potential borrowers and then to monitor them. Monitoring may require efficiency wages in order to avoid the threat of moral hazard.

Finally, the regulatory and competitive environment affects the optimal organization of firms. Tight regulation inhibits the ability of the financial sector to take advantage of highly skilled individuals because of rules and restrictions on the ways firms organize their activities, thus lowering demand for skill in finance (Philippon and Reshef (2012)). Therefore, deregulation will increase relative demand for skill and relative wages in finance. Indeed, Guadalupe (2007) provides evidence that competition increases demand for skill. There is also evidence that organizational change can be skill-biased; see Bresnahan and Trajtenberg (1995), Bresnahan, Brynjolfsson, and Hitt (2002), and Caroli and Van Reenen (2001).

We find that deregulation is the most important driver for wages and relative skill intensity in finance in our sample. In particular, deregulation of international capital flows has a robust and positive effect on relative wages and skill intensity in finance across all regression specifications that we entertain, and its impact is economically large. For example, when restrictions on international capital flows are removed (to the extent that they were in, say, Belgium and the Netherlands), the relative wage in finance increases by 0.37 and the relative skilled wage in finance increases by 0.45. This is compared to average increases of 0.13 and 0.08 in the sample, respectively. This echoes the findings in Philippon and Reshef (2012) for the U.S. Using micro data for the U.S., U.K., Germany and France, and controlling for observables, Wurgler (2009) finds similar trends to our excess wage series for these countries. Wurgler (2009) also argues that financial deregulation may help explain

[2] Autor, Levy, and Murnane (2002) focus on digital imaging technology. A more recent technology in banking is internet-based services, that can replace medium-skilled employees, and leverage the skills of highly skilled employees who design these services.

the different experiences of the U.S. and the U.K. on one hand, versus Germany and France on the other hand—but he does not estimate this, nor does he test alternative hypotheses.

While higher ICT-skill complementarity in finance and the increase in relative ICT intensity in finance mechanically drive relative demand for skill and skilled wages, this relationship mechanical, not causal. In the presence of deregulation, ICT has no explanatory power. The *differential* investment in ICT finance relative to the rest of the private sector is largely driven by deregulation; financial globalization (*de facto* measures of exposure) and, to a lesser extent, demand for domestic credit also matter.

Morrison and Wilhelm (2004) and Morrison and Wilhelm (2008) argue that investment in ICT affected the optimal organization of investment banks in the U.S.: Codification of activities reduced the incentives for accumulation of tacit human capital through mentorship, which led to change from partnerships to joint stock companies. This change would also lead to higher wage compensation versus illiquid partnership stakes that are "cashed in" only upon retirement. While this argument is germane only to American investment banks (we study 22 countries), our results are consistent with it: Deregulation is the impetus for investment in ICT and reorganization in finance. Larger investments in ICT in finance relative to the private sector occur only after deregulation took place.

One concern about high wages in finance is that they attract skilled workers from other parts of the economy, where they may be more productive socially. Addressing the distinction between social and private returns is beyond the scope of this paper. However, if competition for talent is fierce, the same forces may manifest themselves across international borders. Here, it is relatively clear that attracting skilled workers from other countries has detrimental effects on the country of origin.

We examine whether high wages in finance attract workers across international borders. To examine this hypothesis we use bilateral immigration data in a sample of 15 industrialized countries, where immigrants in each destination are differentiated by level of education and industry. We fit regression models that resemble gravity equations from the international trade literature (e.g., Ortega and Peri (2012)), and find that high wages in finance do attract skilled workers across borders. This effect is not present for unskilled workers or for skilled workers in other sectors of the economy. This raises concerns that high wages in finance cause brain drain.

Our work contributes to several strands of literature. First, focusing on human capital sheds light on the organization of the financial sector. Finance is thought to have an important role in

economic development (e.g., Rousseau and Sylla (2003) and Levine (2005)). Therefore, understanding how it functions is important for understanding how finance performs its role and contributes to society, in terms of higher income and faster growth.

However, it is important to distinguish between human capital and wages within finance, and its overall size. The growth of finance and its internal organization are not the same phenomena, and follow different—although probably not independent— paths.[3] For example, juxtaposing the findings in Philippon (2012) with Philippon and Reshef (2013), we see that in the U.S., finance grows continuously from 1945 and on, but that growth is not always skill biased. In 1945–1980 finance hires more workers with the same skill composition as the rest of the economy. In 1980–1995 growth of finance comes with disproportionately highly skilled workers, but these workers are paid competitive wages. Only after 1995 we observe growth, skill bias, and excess wages together.

Second, we contribute to the literature on the allocation of talent. Both Baumol (1990) and Murphy, Shleifer, and Vishny (1991) stress the importance of allocating the most talented individuals in society to socially productive activities. Policies and institutions that can readily influence this allocation can be much more important for welfare than the overall supply of talent. Indeed, we find that regulation is the most important determinant of wages in finance. Wurgler (2009) and Cahuc and Challe (2012) argue that the existence of financial bubbles can attract skilled workers to finance. In line with this, Goldin and Katz (2008b) document a large increase the number of Harvard undergraduates who choose a career in finance since 1970, as well as an increasing wage premium that they are paid relative to their piers. And Oyer (2008) argues that lifetime income differences in times of financial booms attract Stanford MBAs to finance, rather than consulting or marketing. Kneer (2013a) and Kneer (2013b) argue that financial deregulation has disproportionately detrimental on other skill intensive sectors, while Cecchetti and Kharroubi (2013) argue that credit growth hurts disproportionately R&D-intensive manufacturing industries. Although direct evidence is not provided, these authors interpret their findings as indicating a brain-drain from the real economy into finance. Here we provide direct evidence that internationally, high wages in finance attract highly educated individuals.

Our work also contributes to the understanding of demand for skill and income inequality. The overall rise in relative demand for more educated workers in developed countries, as well as the

[3] We do not ask whether there is "too much finance", *cf.* Arcand, Berkes, and Panizza (2012), Cecchetti and Kharroubi (2012), and Beck, Degryse, and Kneer (2012). Philippon and Reshef (2013) show that the rise of the size of finance is not correlated with growth in a set of currenlty industrial countries. In addition, the relationship of finance to income is not straightforward. The evolution of wealth in Piketty (2014) should directly affect the total payments to finance—not the wage rate or organization in finance.

increase in their relative wages, is well documented, e.g. Machin and Van Reenen (1998). Berman, Bound, and Machin (1998) attribute this to skill-biased technological change. Autor, Katz, and Krueger (1998) and Autor, Levy, and Murnane (2003) discuss the role of computers in driving this shift in relative demand, while Acemoglu (2002a) argues that the increase in supply of more educated workers biases innovation towards equipment that is more complementary to their skills. Acemoglu and Autor (2011) highlight these and other forces that may affect relative demand, in particular globalization and offshoring. We show that financial deregulation is an additional determinant to the bias in technological change through its effect on investment incentives and demand for ICT.[4]

In the next section we document a set of fact about wages and skill intensity in finance. In section 3 we entertain explanations for the rise in demand for skill and wages in finance. In Section 4 we show how high wages in finance attract skilled workers across borders (skilled immigration). In Section 5 we offer concluding remarks.

2 The facts

In this section we describe the evolution of wages and human capital in the financial sector in a set of 22 mostly developed countries in 1970–2005. Overall, we find that while many countries experience a rise in wages in finance, both for unskilled and in particular for skilled workers—not all do. This phenomenon is not uniform; and there is much heterogeneity in magnitudes. There is also an increase in skill intensity in many countries, but this in itself is not a strong driver of the rise in average wages in finance.

Before turning to describing our findings, we briefly describe the data underlying the series that we construct. We rely on the EU KLEMS dataset, March 2008 release. See O'Mahony and Timmer (2009) for detailed documentation.

Finance is comprised of three subsectors: Financial intermediation, except insurance and pension funding (by banks, savings institutions, and companies that provide credit services); insurance and pension funding, except compulsory social security; and other activities related to financial intermediation (securities, commodities, venture capital, private equity, hedge funds, trusts, and other investment activities, including investment banks). For notational simplicity we will refer to

[4] See Acemoglu (2002b) for a review of the early literature on skill biased technological change. Acemoglu and Autor (2011) provide an up-to-date report on empirical findings and theoretical considerations. For other explanations for the increase in demand for skilled workers see Card (1992), Card and Lemieux (2001), and Acemoglu, Aghion, and Violante (2001).

this sector as "Finance". We analyze the evolution of time series in finance relative to the non-farm, non-finance, private sector, which we denote as NFFP.[5]

All labor concepts here (wages, education and hours worked) pertain to employees. We chose not to use the slightly different concept of "persons engaged", which includes proprietors and non-salaried workers in addition to employees, for the following reason. Total compensation of persons engaged is calculated in the EU KLEMS by total compensation of employees multiplied by the ratio of hours worked by persons engaged to hours worked by employees. This implies the same average wage for salaried and non-salried workers, which is woefully inadequate when comparing finance to other sectors of the economy (consider hedge fund partners versus small business proprietors in retail).

2.1 Trends in finance relative wages

We start with the relative average wage in finance, or simply finance relative wage, defined as

$$\omega_{fin,t} \equiv \frac{\overline{w}_{fin,t}}{\overline{w}_{nffp,t}} \ , \tag{1}$$

where the average wage in each sector $\overline{w}_{i,t}$ is calculated as total compensation of employees divided by the total hours worked by employees. Table 1 Panel A reports the series at four mid-decade years and decade-long changes. Figure 1 depicts the finance relative wage for four groups of countries. In Panel A and Panel B we group countries who see relative wages in finance increasing. Luxemburg exhibits the largest increase, followed by the U.S., Spain and The Netherlands. In these countries the average wage in finance reaches about twice the average wage in the NFFP sector.

Panel C depicts countries with decreasing finance relative wage, with the largest drop in Italy, mostly in 1975–1985. Panel D depicts countries with mixed trends in ω_{fin}. Notable here are the United Kingdom, where ω_{fin} fluctuates substantially; and Australia, with a sharp decrease until 1985, and then an equal increase until 2005. Overall, there is significant heterogeneity in the trends of ω_{fin} across countries: 11 countries see increases, while the remainder are split between decreases and mixed trends.

We wish to know what is the importance of changes in the skill composition of finance for the relative wage of finance. To asses this, we decompose changes in ω_{fin} into within and between skill

[5] The EU KLEMS is an industry-based dataset. As such, it does not distinguish between components of industries that are public. For example, hospitals and schools that are publicly owned are included in health and education services, respectively. Only public administration, defense and compulsory social security are considered the public sector, and are thus excluded from the NFFP sector.

group changes using the formula

$$\Delta\omega_{fin} = \sum_i \Delta\omega_i \overline{n}_i + \sum_i \Delta n_i \overline{\omega}_i \ , \tag{2}$$

where $i \in \{\text{skilled,unskilled}\}$ denotes skill groups. Here $\Delta\omega_i$ is the change of the wage of skill group i in finance relative to $\overline{w}_{nffp}$, $\overline{n}_i$ is the average employment share of skill group i in finance, Δn_i is the change in the employment share of i within finance, and $\overline{\omega}_i$ is the average relative wage of skill group i in finance in the sample. The first sum captures the contribution of wage changes within groups, while the second sum captures the contribution of changes of skill composition (the "between" component). We compute this decomposition for each country in the sample. The definition of high skilled workers in the EU KLEMS is consistent across countries, and implies a university-equivalent bachelors degree.

Table 2 reports $\Delta\omega_{fin}$, the within share ($\sum_i \Delta\omega_i \overline{n}_i / \Delta\omega_{fin}$) and the between share ($\sum_i \Delta n_i \overline{\omega}_i / \Delta\omega_{fin}$) for all countries, sorted by $\Delta\omega_{fin}$. We ignore five countries with particularly small changes in ω_{fin} in absolute value (Germany, U.K., Austria, Belgium, Slovenia) because in these cases the within and between shares become arbitrarily large, often exceeding unity (for example, the U.K.). After ignoring these countries a clear pattern emerges. First, the within share is on average larger than the between share, 0.64 versus 0.36, which implies that within group wage changes matter more than changes in skill composition (this conclusion holds even without ignoring the five lowest $\Delta\omega_{fin}$ countries). Second, the within share is strongly positively correlated with the absolute value of $\Delta\omega_{fin}$; the rank correlation is 0.66 with a p-value of 0.02. This implies that big changes in the finance relative wage are associated with big within-skill group wage changes; composition changes matter less where changes are bigger.

To illustrate this point more clearly we compute a benchmark wage for finance

$$\widehat{\omega}_{fin,t} = \frac{1 + h_{fin,t}\pi_{nffp,t}}{1 + h_{nffp,t}\pi_{nffp,t}} \ , \tag{3}$$

where $h_{i,t}$ is the employment share of skilled workers in sector i, and $\pi_{nffp,t}$ is the skill premium (relative wage of skilled workers minus one) in the NFFP sector. The benchmark wage $\widehat{\omega}_{fin,t}$ is the relative wage that would prevail in finance if skilled and unskilled workers earned the same as in the NFFP sector.[6] Variation in the skill premium will have a strong effect on $\widehat{\omega}_{fin}$ if $h_{fin} - h_{nffp} > 0$ and if this difference is increasing, which is the case, as we show below. The finance excess wage is

[6] See appendix for derivation of (3).

defined as

$$\phi_{fin,t} = \omega_{fin,t} - \widehat{\omega}_{fin,t} \ . \tag{4}$$

Figure 2 reports $\phi_{fin,t}$ using the same country grouping as Figure 1. Due to the availability of data on skilled employment and wages, we are unable to match the sample of Figure 1. We see that although the level of $\phi_{fin,t}$ is generally lower than the finance premium, defined as $\omega_{fin,t} - 1$, the trends are almost identical, with few exceptions. This reinforces the point made above: most of the variation in the finance relative wage is due to within-skill wage shifts.

A closer inspection of the data shows that most of the excess wage is due to the relative wage of high skilled workers in finance. The relative wage of skilled workers, defined below, tracks ω_{fin} very closely. Therefore, we examine this variable next.

2.2 Finance relative skilled wages

The relative high skill wage in finance is defined as

$$\sigma_{fin,t} \equiv \frac{s_{fin,t}}{s_{nffp,t}} \ , \tag{5}$$

where the average wage of skilled workers in each sector $s_{i,t}$ is calculated as total compensation of skilled employees divided by the total hours worked by skilled employees. Table 1 Panel B reports the series at four mid-decade years and decade-long changes. The sample reduces relative to Panel A due to availability of data on wages and employment by skill. Figure 3 depicts the finance skilled relative wage for four groups of countries. In Panel A and Panel B we group countries who see skilled relative wages in finance increasing. Here Australia exhibits the largest increase (but recall the drop in ω_{fin} until 1985), followed by the U.K., the U.S. and Canada. In these countries skilled workers in finance command a wage premium of 50–80% relative to skilled workers' wages working in the NFFP sector.

Panel C depicts countries with decreasing finance relative wage, with Italy again exhibiting the largest drop. Panel D depicts countries with mixed trends in σ_{fin}. As with relative average wages, there is significant heterogeneity in the trends of σ_{fin} across countries: 12 countries see increases, three see decreases, and seven exhibit mixed trends.

2.3 Finance relative skill intensity

We now consider relative skill intensity in finance, defined as

$$\rho_{fin,t} \equiv h_{fin,t} - h_{nffp,t} \ ,$$

where $h_{i,t}$ is the employment share of high skilled workers in sector i. Table 1 Panel C reports the series at four mid-decade years and decade-long changes. The sample reduces relative to Panel A due to availability of data on employment by skill. Figure 4 depicts the finance relative skill intensity for two groups of countries. In Panel A we group countries who see relative skill intensity in finance consistently increasing. By far, Spain and Japan see the largest increases, where their financial sector becomes more than 30 percent points more skill intensive in 2005.

It is interesting to compare the changes in $\rho_{fin,t}$ to changes in finance relative wages. Spain and The Netherlands see significant increases in both. But Luxemburg and the U.S., while exhibiting the largest increases in ω_{fin}, see only very modest increases in relative skill intensity. This is manifested in the poor ability of the benchmark wage to track the finance relative wage, especially in the countries and periods when the increase in the finance relative wage is large.

2.4 Finance wages and overall inequality

Changes in the relative wage of skilled workers are an important dimension of overall changes in wage inequality. Therefore, we wish to asses how much finance contributes to changes in the relative wage of skilled workers in the nonfarm private sector (including finance), denoted here as $\Delta\pi$.[7] Skilled workers are consistently defined in the EU KLEMS as holding a university-equivalent bachelors degree. We follow a similar approach as in (2), and decompose

$$\Delta\pi = \sum_j \Delta\pi_j \overline{h}_j + \sum_j \Delta h_j \overline{\pi}_j \ , \tag{6}$$

where $j \in \{\text{fin,nffp}\}$ denotes the two sectors that comprise the nonfarm private sector (finance and NFFP). Here $\Delta\pi_j$ is the change in the relative wage of skilled workers in sector j relative to the

[7] Using survey data and corrections for top coding, Philippon and Reshef (2012) find that finance accounts for 15% to 25% of the overall increase in wage inequality in 1980–2005. Roine and Waldenström (2014) show how close the finance relative wage in Philippon and Reshef (2012) tracks the share of income of the top percentile in the U.S. over the entire 20^{th} century. In line with this, Bakija, Cole, and Heim (2012) document that financial professionals increased their representation in the top percentile of earners (including capital gains) from 7.7% in 1979 to 13.2% in 2005, while their representation in the top 0.1 percentile of earners from 11.2% in 1979 to 17.7% in 2005 (see also Kaplan and Rauh (2010)). For similar evidence for the United Kingdom and France, see Bell and Reenen (2013) and Godechot (2012).

overall average wage of unskilled workers in the nonfarm private sector and $\overline{\pi}_j$ is the average relative wage of skilled workers in sector j, thus defined. This definition is useful because, as we note above, most of the variation in the finance relative wage is driven by skilled wages in finance. Here $\overline{h}_j$ is the share of skilled workers employed in sector j out of the entire nonfarm private sector and Δh_j is the change in that share for sector j. The first sum captures the contribution of wage changes within sectors, while the second sum captures the contribution of allocation of skill across sectors (the "between" component). We compute this decomposition for each country in the sample. Another way to arrange the elements of (6) is

$$\Delta\pi = \left(\Delta\pi_{fin}\overline{h}_{fin} + \Delta h_{fin}\overline{\pi}_{fin}\right) + \left(\Delta\pi_{nffp}\overline{h}_{nffp} + \Delta h_{nffp}\overline{\pi}_{nffp}\right) \ . \tag{7}$$

This way we can examine directly the contribution of finance, by summing its within and between components. This captures both the effect of changes in finance skilled wages, given the number of skilled workers in finance, and the effect of changes in allocation of skilled workers to finance, given their relative wage.

Table 3 reports $\Delta\pi$, the within share ($\sum_j \Delta\pi_j\overline{h}_j/\Delta\pi$), the between share ($\sum_j \Delta h_j\overline{\pi}_j/\Delta\pi$), and the finance share ($\left(\Delta\pi_{fin}\overline{h}_{fin} + \Delta h_{fin}\overline{\pi}_{fin}\right)/\Delta\pi$) for all countries, sorted by $\Delta\pi$ in decreasing order. First, we see that π has increased in several countries in our sample, while in others it has not, and even declined. Second, the within share completely dominates the decomposition, it is on average equal to one; it is changes in relative skilled wages, not changes in allocation of skill across sectors that derives $\Delta\pi$.

When we examine the contribution finance in Table 3, it is useful to differentiate between cases in which the finance share is positive, and when it is negative. When the finance share is positive, this means that finance contributes to $\Delta\pi$ in the same direction. The average contribution across these cases is 36% (26% without Australia). When the finance share is negative, this means that finance contributes to $\Delta\pi$ in the opposite direction. With the notable exception of Italy (where finance relative wages decline sharply, albeit from a high level), this happens when $\Delta\pi$ is negative. This implies that even as overall trends in the economy are to lower inequality, finance counters this and contributes to increasing inequality. The average contribution across these cases is -21%. Given the size of finance in total skilled employment (6%, or 5.4% without Luxemburg, which employes 20% of its skilled workers in finance) these are large contributions to inequality.

3 Explaining finance relative demand for skill and relative wages

There are two main competing theories for variation in relative demand for skill and relative wages in finance: One relies on technology, while the other relies on regulation. For example, Autor, Katz, and Krueger (1998) and Autor, Levy, and Murnane (2003) highlight the role of ICT in changing demand for skill—in particular, replacing routine tasks and augmenting non-routine cognitive skills. If computers diffuse more rapidly in finance relative to the rest of the economy, then this can help explain relative skill intensity and relative wages in finance. In addition, the strong complementarity of ICT with non-routine cognitive skills can help explain changes in within-education group finance relative wages. If highly educated workers possess such non-routine cognitive skills, then higher ICT intensity in finance can help explain the higher wages that these workers in finance command, relative to similar workers in the rest of the economy.

In contrast, Philippon and Reshef (2012) argue that financial deregulation is the main driver of relative demand for skill in finance, and that technology plays a more modest role. In this section we test which theory has more explanatory power. In addition, we also study the effects of changes in *de facto* financial globalization, and domestic demand for credit. All can potentially increase demand for skill and wages in finance.

We stress that we wish to explain the *differential* part of the rise in demand for skill and wages in finance, the part that is net of demand for skill and wages in the NFFP sector. Some of the forces that affect demand for skill operate in analogous ways in finance and in the NFFP sector, for example, the precipitous drop in the price of computing power. However, the differential demand for skill is the more interesting object—we document this part in Section 2 above—and which may be driven by forces that do not operate in the NFFP sector.

We use a simple framework to organize the discussion. Suppose that output in sector j in time t is produced using three factors: High skill labor H, low skill labor L and computer capital C. Let the production function take a nested CES form as follows

$$Y_{j,t} = \left\{ \gamma_j L_{j,t}^{\frac{\sigma-1}{\sigma}} + (1-\gamma_j) \left[\mu_{j,t} C_{j,t}^{\alpha_j} H_{j,t}^{1-\alpha_j} \right]^{\frac{\sigma-1}{\sigma}} \right\}^{\frac{\sigma}{\sigma-1}},$$

where $\alpha_j, \gamma_j \in (0,1)$, $\mu_{j,t}$ is a factor augmenting parameter for the skill-capital composite, and $\sigma > 1$. The important feature of this production function is that the elasticity of substitution between skilled and unskilled labor σ is greater than the elasticity of substitution between skilled

labor and computers, which is equal to one here: This implies computer-skill complementarity.[8] Adding a second type of capital along the lines of Krusell, Ohanian, Rios-Rull, and Violante (2000), or a different elasticity of substitution between skilled labor and computers (while maintaining the ranking above) unnecessarily complicates the analysis. We assume that σ is the same in all sectors, while α_j and γ_j may vary across sectors.

If factor markets are competitive, without adjustment costs and without compensating differentials, then factor returns are equalized across sectors. Let s and w be the hourly wages for high and low skill workers, respectively, and let r be the rental cost of computer capital. Cost minimization implies

$$\ln\left(\frac{C}{H}\right)_{j,t} = \ln\frac{\alpha_j}{1-\alpha_j} + \ln\left(\frac{s}{r}\right)_t$$

and

$$\ln h_{j,t} = c_j - \sigma \ln \pi_t + (\sigma - 1)\,\alpha_j \ln\left(\frac{s}{r}\right)_t + (\sigma - 1)\ln \mu_{j,t}\ ,$$

where $h_{j,t} = H_{j,t}/L_{j,t}$, c_j is a constant and $\pi_t = s_t/w_t$. All else equal, a drop in the cost of computers r increases their use in production, which, in turn, increases relative demand for skill in any sector. Similarly, an increase in μ drives up relative demand for skilled labor. Evidence in Goldin and Katz (2008a) and Machin and Van Reenen (1998) supports the notion of a secular trend in μ for the aggregate economy in the U.S. and other OECD countries. But we are interested in demand for skill of the financial sector *relative* to the rest of the economy. The relative demand for skill in finance versus the NFFP sector is given by

$$\ln h_{fin,t} - \ln h_{nffp,t} = c + (\sigma - 1)\,(\alpha_{fin} - \alpha_{nffp}) \ln\left(\frac{s}{r}\right)_t + (\sigma - 1)\left(\ln \mu_{fin,t} - \ln \mu_{nffp,t}\right)\ , \quad (8)$$

where $c = c_{fin} - c_{nffp}$ is a constant. The relative wage π does not affect the *relative* skill intensity in finance because we assume $\sigma_{fin} = \sigma_{nffp}$. Philippon and Reshef (2012) show that π, in conjunction with different elasticities, cannot be an important factor in explaining the increase in relative skill intensity in finance. We view $\mu_{fin,t}$ as capturing all non-computer factors that increase relative demand for skill in finance, including deregulation, domestic demand for credit and financial globalization.

Differences in the intensity of computers in production allow for an effect of computer prices r on relative demand. All else equal, if finance is more computer intensive, i.e. $\alpha_{fin} > \alpha_{nffp}$, then a

[8] Estimates of the aggregate elasticity of substitution between skilled and unskilled labor are typically greater than one, and on the order of 1.5; for example, see Katz and Murphy (1992) and Krusell, Ohanian, Rios-Rull, and Violante (2000) and others cited in Autor and Katz (1999). However, these aggregate elasticities can mask heterogeneity of elasticities at the sector level, possibly below one (Reshef (2011)).

drop in r drives up the relative demand for skill in finance. If $\alpha_{fin} = \alpha_{nffp}$, then changes in r have no effect. However, note that in this case an increase in μ_{fin} will still drive up the relative use of computers in finance, because an increase in μ_{fin} increases the marginal productivity of all factors in finance, including computers.

Turing from theory to empirical results, we estimate below somewhat higher ICT-skill complementarity in finance relative to NFFP sector. We also find an increase in relative ICT intensity in finance versus NFFP. Together, these can potentially explain the rise in relative demand for skill and relative wages in finance. However, in the presence of deregulation, relative ICT intensity in finance has no explanatory power for relative skill intensity and wages. In fact, relative ICT intensity is largely determined by deregulation. We interpret these findings as follows: Deregulation makes the differential investment in ICT worthwhile; without deregulation there would be similar investment in ICT and similar demand for skill in finance as in the NFFP sector. This is consistent with the case of $\alpha_{fin} = \alpha_{nffp}$. Deregulation may also have an effect over and above its effect on incentives to invest in ICT, but our empirical analysis cannot separate these two channels.

The theoretical framework above and the empirical results are not inconsistent with the analysis and findings in Morrison and Wilhelm (2004) and Morrison and Wilhelm (2008), which are discussed in the introduction. While changes in ICT intensity may affect optimal organization in finance, the differential change in ICT intensity in finance is driven by deregulation.

We now move on to describe our explanatory variables, and then estimate the ICT complementarity to skill in finance and compare it to complementarity in NFFP. We then fit relative wage and relative skill regressions that allow entertaining a horse race between ICT and deregulation.

3.1 Explanatory variables

Information and communication technology

Computers and software are complementary to complex tasks (non-routine cognitive) and substitutes for routine tasks (Autor, Levy, and Murnane (2003)). Employees in complex or analytical jobs become more productive, while the demand for routine jobs decreases. The financial sector has been an early adopter of IT. We therefore consider the share of information technology capital, communication technology capital, and software in the capital stock of the financial sector minus that share in the aggregate economy.[9]

[9] Yates (2000) documents the industrial use of IT—telephones, typewriters, improved filing techniques, tabulation techniques, and sorting cards—during the previous information revolution, starting at the end of the 19th century. Most of the evidence, which is descriptive, is for management in manufacturing, although some examples exist for insurance.

According to the technology theory, reductions in the price of computers, software and information and communication technology (ICT) spur investment in this type of capital equipment. Investment in ICT has a big return for finance, which is an industry that relies almost entirely on gathering and analyzing data. This return may be greater than in the NFFP sector, leading to relatively more ICT investment and higher stocks in finance than in the rest of the economy. Indeed, according to U.S. fixed asset data from the Bureau of Economic Analysis, finance was the first private industry to adopt ICT in a significant way. In the EU KLEMS data, the average ICT share of the capital stock in finance is 2.6% in 1970, double the 1.3% share in the NFFP sector. Investment in ICT will lead to higher demand for skill, and in the presence of worker heterogeneity within groups, to higher wages.

The EU KLEMS dataset provides data on real capital stocks by industry (in 1995 prices), the share of ICT in the real capital stock, and quantity indices for the total industry capital stock, ICT capital and non-ICT capital. Not all countries in the sample report data on real capital stocks, but all report data on quantity indices. For the purpose of illustrating an increase in ICT intensity we appropriately use the share of ICT in the real capital stock. We define the relative ICT intensity in finance as

$$\theta_{fin,t} = ICT\_share_{fin,t} - ICT\_share_{nffp,t} \ ,$$

where $ICT\_share_{i,t}$ is the share of ICT in the real capital stock in sector i.

Table 4 reports θ_{fin} for countries that have the underlying data at four mid-decade years and decade-long changes. For almost all countries θ_{fin} increases over time, in almost all decade intervals. The changes also become bigger over time. Finance becomes more ICT-intensive relative to the NFFP sector practically everywhere, at an increasing rate. Finland exhibits by far the largest increase, followed by Denmark, Australia and the United States. Canada exhibits a low value of θ_{fin}, but this is because ICT intensity is high in the NFFP sector.

Financial regulation

The optimal organization of firms, and therefore their demand for various skills, depends on the competitive and regulatory environment. Tight regulation inhibits the ability of the financial sector to take advantage of highly skilled individuals because of rules and restrictions on the ways firms organize their activities, thus lowering demand for skill in finance (Philippon and Reshef (2012)). Therefore, deregulation will increase relative demand for skill and relative wages in finance.

In order to capture the regulatory environment we rely on data on financial reforms from the Abiad, Detragiache, and Tressel (2008) dataset. The dataset includes measures of financial reform

along eight dimensions, of which we use six:[10]

1. *Directed credit/reserve requirements.* This measure combines the restrictiveness of reserve ratios (>20%, 10-20%, <10%); and whether the government directs credit to certain sectors, either by allocation or subsidized rates. Overall, this measure captures restrictiveness on the profitability of existing banks from lending, either by restricting leverage (but also risk), or by preventing optimal decisions on allocation of lending. When the measure is high, there are less restrictions.

2. *Interest rate controls.* This measure captures the degree to which the government regulates deposit and/or lending rates. Overall, these are interventions in the optimal choice of deposit and lending rates. When the measure is high, there are less restrictions.

3. *Entry barriers/pro-competition measures.* This measure captures four dimensions of entry: (1) The extent to which the government allows foreign banks to enter the domestic market; (2) Whether the government allows entry of new domestic banks; (3) Whether there are restrictions on bank branching; and (4) whether the government allows banks to engage in a wide range of activities. The last component distinguishes between universal banking versus Glass-Steagall type separation of credit intermediation from investment activities, but it is not available separately. The measure is high when there is less restriction on activities and lower entry barriers.

4. *Banking supervision.* This measure captures four dimensions of supervision: (1) Whether a country adopted a capital adequacy ratio based on the Basle standard; (2) Whether the banking supervisory agency is independent from executive branch influence; (3) Whether a banking supervisory agency conducts effective supervision through on-site and off-site examinations; and (4) Whether the country's banking supervisory agency covers all financial institutions without exception. A higher measure here implies that more of these conditions are met.

5. *Privatization.* This measure captures the degree to which the banking sector is public (>50%, 25-50%, 10-25%, <10%). Higher values mean a lower public share.

[10] The remaining two dimensions are the existence of aggregate credit ceilings, and policies regarding security markets. We drop the aggregate credit ceilings indicator because data on this dimension is missing for most countries. The security markets policy indicator is omitted because it has almost no variation in the sample of countries we consider, where other data exist. This measure captures two (very different) dimensions securities market policy: (1) Whether a country takes measures to develop securities markets; and (2) Whether a country's equity market open to foreign investors.

6. *International capital flows.* This measure captures three dimensions of interventions in foreign exchange: (1) Whether all types of international activities face the same exchange rate ("unified system"); (2) Whether there are restrictions on capital inflows; and (3) Whether there are restrictions on capital outflows. A higher measure implies fewer restrictions.

All measures take discrete values from 0 to 3. Higher values generally mean fewer restrictions, except for banking supervision, where some of the sub-components imply larger restrictions. We stress that this dimension does not correspond well to the deregulation measure in Philippon and Reshef (2012), which captures removal of restrictions on organization and financial activities. This is captured, although very partially, in the entry barriers/pro-competition measures. A shortcoming is that none of the measures addresses insurance services, which are an important part of the financial system.

Table 5 summarizes levels of the linear regulation measures in 1973 and 1995, together with their change over this period.[11] Many countries in the sample obtain the highest level in several dimensions by 1995, but there is substantial cross-country variation. In unreported tabulations we show that cross country variation all but ceases after 1995. Therefore, when we use deregulation in regressions we restrict the sample so that there is variation in deregulation variables.[12]

Financial globalization and domestic credit

Screening and monitoring debtors, especially managing investments overseas, and serving investors from abroad all require specific skills that may be in short supply, and they are prone to threats of moral hazard. We expect an increase in these activities to both increase demand for skill and increase wages, in particular of skilled workers.

When demand for credit is high, it is necessary to employ highly skilled workers to screen potential borrowers and then to monitor them. Monitoring may require efficiency wages in order to avoid the threat of moral hazard. We capture this using bank credit to non-financial institutions as a ratio to GDP. The data are from Schularick and Taylor (2012). Foreign investors that are represented by local financial firms demand high quality services, which can be only performed by skilled workers. Likewise, investment overseas is a more complex type of activity, which also requires highly skilled workers. If the skills needed to preform these tasks is in fixed supply, or supply does not keep up with demand, then wages of those who can perform these tasks well will be bid up. We capture this using a measure of *de facto* financial globalization, namely foreign assets plus foreign liabilities as a ratio to GDP. The data are from Lane and Milesi-Ferretti (2007).

[11] Data for the Czech Republic and Hungary start in 1990.

[12] For example, when we use right hand side variables in levels and with three lags, our sample ends in 1998; see below.

3.2 ICT and complementarity with high skilled workers

In what follows we establish that ICT capital is more complementary with skilled workers in finance than with skilled workers in the NFFP sector. This, together with the increase in its relative intensity in finance documented above in Table 4, investment in ICT can be a mechanical force driving demand for skill and wages in finance.

Our starting point is the short run industry variable cost function in a competitive setting:

$$CV\left(W_h, W_l\ ;\ C, K, Q\right)\ ,$$

where W_h and W_l are wages of high skill and low skill workers, respectively. Here C is ICT capital, K is all other forms of capital, and Q is output. We assume that capital is quasi-fixed and that the cost function can be approximated by a translog function. Standard manipulations yield

$$S = \eta + \alpha \ln\left(\frac{W_h}{W_l}\right) + \beta \ln\left(\frac{C}{Q}\right) + \gamma \ln\left(\frac{K}{Q}\right) + \delta \ln Q\ , \tag{9}$$

where S is the wage bill share of skilled labor.[13] Here β and γ capture the degree of complementarity of skilled labor with ICT and other types of capital. Positive values imply complementarity to skilled labor.[14] If the underlying production function is constant returns to scale, then $\delta = 0$. This is a reasonable assumption at the industry or aggregate level, but we do not impose it.

We estimate empirical versions of (9) separately for finance, for the entire economy, and for the NFFP sector in panel data from the EU KLEMS dataset:

$$S_{ct} = \eta_c + \alpha \ln\left(\frac{W_h}{W_l}\right)_{ct} + \beta \ln\left(\frac{C}{Q}\right)_{ct} + \gamma \ln\left(\frac{K}{Q}\right)_{ct} + \delta \ln Q_{ct} + \varepsilon_{ct}\ , \tag{10}$$

where c denotes countries, t denotes years, η_c are country fixed effects, and ε_{ct} is the the error term that captures technological shocks that are not embodied in capital. Our identifying assumption is that technology is stable over time, and that its curvature is the same across countries within an industry (the coefficients α, β, γ and δ do not vary over time or countries within an industry). The η_c terms allow technology to be different across countries within industries, for example the fact that the U.K. is a global financial sector and may require more skilled workers. All variables are industry-specific, including relative wages.

We use industry-specific quantity indices for C, K and Q, which are equal to 100 in 1995. This

[13] See appendix for derivation of (9).

[14] To be precise, positive β or γ imply that either type of capital (ICT or other, respectively) is more complementary with skilled labor relative to unskilled labor.

renders the C/Q and K/Q ratios equal to unity in 1995, but does not affect the estimation in the presence of country fixed effects. The proportional adjustment to make the ratios "real" is additive in logs and is absorbed by the country fixed effects. Quantity indices are available for 22 countries in the EU KLEMS, and for different time periods.[15] The EU KLEMS provides quantity indices for financial intermediation (finance in our taxonomy) and the aggregate economy. We manipulate indices for the aggregate economy, finance, farm and public sectors, using nominal values in the base year (1995) to obtain indices for NFFP; see appendix for details. This reduces the sample to the 16 countries that are used above in Table 4.

We follow standard methodology (e.g. Berman, Bound, and Griliches (1994)) and estimate (10) by TSLS, instrumenting for the capital shares using lagged values. We report robust standard errors.[16] We report results using up to three lags in the instrument set, but results using other lags are similar.

The results of these regressions are reported in Table 7. We see that ICT is complementary to skill in all sectors, and in the aggregate. However, we find that ICT is more complementary to skill in finance. Owing to the high precision of the estimates, this difference is also highly statistically significant. These results hold whether or not we include $\ln Q$. In untabulated results we find similar results in specifications that constrain the country dummies to be equal in finance, the aggregate and NFFP.[17]

In the presence of stronger ICT-skill complementarity and increasing ICT intensity in finance, we can expect ICT to have strong explanatory power for relative skill intensity and wages in finance. But if the differential investment in ICT is driven by deregulation, then we expect to find no effect of ICT when deregulation is controlled for. We turn to testing this hypothesis in the next subsection. In addition, note that the positive coefficients to $\ln Q$ in Table 7 imply that increases in output increase demand for skill. Inasmuch as deregulation allows differential expansion in financial output, this provides an additional explanation for "skill-biased financial development" in this sample (Philippon and Reshef (2007)).

[15] These are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Spain, Finland, France, Germany, Hungary, Irland, Italy, Japan, Korea, Luxemburg, Netherlands, Portugal, Slovenia, Sweden, United Kingdom, United States (NAICS based data).

[16] We do not cluster standard errors at the country level because there are only 13 to 20 countries.

[17] These results are available upon request.

3.3 Demand for skill and relative wages: regression analysis

We fit two sets of regressions. The first set is in levels

$$y_{c,t} = \beta' x_{c,t-3} + \alpha_c + \delta_t + \varepsilon_{c,t} \ , \tag{11}$$

where y is either the finance relative wage ω_{fin}, the finance skilled relative wage σ_{fin}, the relative skill intensity ρ_{fin}, or the finance excess wage ϕ_{fin}. Here α_c and δ_t are country and year fixed effects, respectively, and ε_{ct} is the error term. The vector x includes explanatory variables: Relative ICT in finance θ_{fin}, bank credit to non-financial entities ratio to GDP, financial globalization (log of foreign assets plus foreign liabilities as a ratio to GDP), and the six deregulation variables.[18] We lag x by three years to guard against simultaneity. Using longer lag lengths yield similar results, but reduces explanatory power. We use deregulation data in 1973–1995, which restricts t to 1976–1998 in specifications that use deregulation variables. We estimate (11) using OLS; identification of β relies on within-country variation, relative to the average level in a particular year.

The second set of regressions are predictive regressions in changes

$$\Delta y_{c,t+3} = \beta' \Delta x_{c,t} + \alpha_c + \varepsilon_{c,t} \ , \tag{12}$$

where $\Delta y_{c,t+3} = y_{c,t+3} - y_{c,t}$ and $\Delta x_{c,t} = x_{c,t} - x_{c,t-3}$. Here, Δx is calculated simply as a first difference.[19] We use deregulation data in 1973–1995, which again restricts t to 1976–1998 in specifications that use deregulation variables. This specification is more demanding than (11) because it controls for country-specific trends. Identification of β relies on within-country variation in changes.

Specification (12) allows us to identify plausibly excludable instruments for variables in changes. We use the relative price of ICT investment relative to other types of investment in the economy as an instrument for changes in relative ICT intensity in finance, which is calculated based on capital stocks.[20] A decrease in the relative price will increase relative demand for ICT investment, and

[18] In the appendix we report estimates where we use indicator variables for financial deregulation as follows: $I\{v = 0\}$, $I\{v = 1 \text{ or } v = 2\}$, $I\{v = 3\}$, where v indicates the value of the linear variable. We group 1 and 2 together to avoid unnecessary multicollinearity when we use all six dimensions together as explanatory variables. This keeps the regression specifications parsimonious without sacrificing much flexibility.

[19] In the appendix we also report estimates where we code the changes in each deregulation measure into indicators for $I\{\Delta v = -1\}$, $I\{\Delta v = 0\}$, $I\{\Delta v = 1\}$, $I\{\Delta v = 2\}$, where Δv is the change in the value of the regulation measure. There are no $\Delta v = -2$ or $\Delta v = 3$ events the sample. When using indicators for changes in regulation, the reference group is no change in all six dimensions of regulation.

[20] We calculate the relative price of ICT investment relative to other types of investment in the economy based on data from the EU KLEMS as follows. We divide real ICT capital expenditures by the quantity index of ICT capital expenditures, further divided by the same ratio for non-ICT expenditures. Since we use this variable only in

hence will have an effect on the change in ICT intensity. As long as the response of finance and NFFP are not the same, this instrument is relevant. It is also excludable, because in the presence of changes in ICT intensity, the relative price has no predictive power (equation (8) is derived by substituting ICT with its relative price). We use financial regulation in levels as an instrument for changes in financial regulation, i.e. deregulation. Abiad and Mody (2005) discuss political economy models that justify this specification.[21] From a mechanical point of view, since the range of financial reform variables is limited between zero and three, a higher level (less regulation) is negatively correlated with increases (deregulation), and hence it's relevance as an instrument. It is difficult to think of mechanisms by which the level of deregulation affects changes in demand for skill and wages in the presence of changes in deregulation, hence it is plausibly excludable.

We estimate four different specifications for each dependent variable. In the first specification we only include relative ICT use in finance, domestic bank credit as percentage of GDP, and financial globalization. In the second and third columns we include only financial reform indices. The difference between these two columns is the sample: While the second column uses all available observations, in the third column we restrict the sample to observations for which we have data on the other three explanatory variables. We do this in order to demonstrate that our results on regulation are not affected by potentially dropping influential observations that do not have data on the other variables. Finally, we use all explanatory variables together in the fourth column. We report robust standard errors.[22] Descriptive statistics are reported in Table 7 and correlations are reported in Table 8. We test for serial correlation in all regressions using the procedure in Wooldridge (2002), page 310–311.[23] We do not reject the null of no serial correlation at conventional levels of statistical significance. In addition, inspection of the partial autocorrelation functions reveals no evidence of autoregressive or moving averages in the errors.

Overall, we find a positive, significant and robust impact of financial globalization, and financial deregulation—in particular, removing restrictions on international capital flows—on relative wages in finance. There is some evidence that ICT derives demand for skill (holding constant wages) in the level regressions, but none in the predictive regressions, whether we estimate with TSLS or not.

the presence of country fixed effects, the relative price captures within-country variation in a statistically meaningful way. In other words, country fixed effects prevent us from comparing across countries uncomparable magnitudes.

[21] Abiad and Mody (2005) use a nonlinear ordered logit regression, and include also the square of the level as predictor of change. The nonlinear specification does not lend itself to TSLS. We experimented with adding the square of the level in the first stage, but in our sample the squared level has almost no predictive power for the change and therefore we omit it.

[22] We do not cluster standard errors at the country level because there are only 13 to 20 countries, depending on the sample.

[23] Drukker (2003) presents simulation evidence that this test has good size and power properties.

We then demonstrate that increase in use of ICT in finance over and above the rest of the economy is itself driven by financial deregulation. This is in line with the case of $\alpha_{fin} = \alpha_{nffp}$, described in Section 3 above.

Table 9 reports the results from level regressions (11). The first 8 columns address relative wages and relative skilled wages in finance. The results in column 1 and 5 suggest that relative ICT use in finance has a positive and marginally significant effect on relative wages and a significant impact on relative skilled wages in finance. However, both the statistical significance and the magnitude of the coefficients drop significantly when we control for financial reform variables.

Domestic credit is positively correlated relative skilled wages. This is consistent with our prior that when demand for credit is high, it is necessary to employ highly skilled workers to screen potential borrowers and then to monitor them. Our measure of *de facto* financial globalization has a positive and significant effect on the finance average relative wage, but no effect on finance skilled relative wage when deregulation measures are included. This is consistent with its positive effect on finance relative skill intensity in column 12.

Financial regulation appears to be very important in explaining relative wages in finance. In particular, lower restrictions on international capital flows has a positive and robust impact on both relative wages and relative skilled wages in finance, which is statistically significant at the 1% level across all specifications. The magnitude of the effect is also economically large. For example, the estimated coefficient to the international capital flow indicator in column 8 (0.147) implies that deregulation of international capital flows by one unit is associated with an increase of relative skilled wages in finance by more than one third of a standard deviation. This is consistent with finance jobs becoming more complex and with an increase in the threat of moral hazard (Philippon and Reshef (2012)) when international capital flows become larger. Lower entry barriers are associated with both lower average and skilled relative wages in finance. This supports the idea that more competition leads financial institutions to minimize their costs, including cutting down rents given to labor.

We find a positive, robust and significant effect of banking supervision on both concepts of relative wages in finance. This may be due to a need to hire more skilled workers in order to conform to tighter supervision and to allocate credit more profitably under Basle convention capital requirements (see also column 12). Another Reason for a positive relationship is regulatory capture (Stigler (1971) and Peltzman (1976)); if so, then regulation may be more beneficial to incumbents. A close examination of the sub-components of this measure reveals that this type of supervision is

particularly detrimental to new entrants. If some of the additional rents that accrue to banks are passed on to workers, then this can explain the positive relationship. Lower restrictions on interest rates increase relative wages in finance but do not have a robust impact on relative skilled wages in finance. This may be due to the fact that simple loans are administered by lower level bank employees.

In columns 9 to 12 we estimate the effects on relative skill intensity in finance. Relative ICT use in finance, domestic credit and financial globalization all have a positive and significant effect on the demand for skilled labor in finance. Among financial reform variables, privatization has a negative effect, while banking supervision has a positive and significant impact on relative skill intensity in finance. This suggests that privatization leads banks to be cost efficient and cut down their expensive labor costs. Privatization also lowers skilled wages in finance.[24]

Consistent with the previous results, in columns 13 to 16 we show that financial globalization, both *de jure* and *de facto*, are strongly correlated with the excess wage. ICT is not, because the excess wage is net of compositional changes, and is mostly driven by the relative skilled wage.

Quantitatively, Table 9 shows that restrictions on international capital flows are very important in driving wages in finance. For example, deregulating international capital flows by one unit increases relative skilled wages in finance by 0.147 (column 8). This translates to more than 100% of the average change in the relative skilled wage in finance in our sample. Financial globalization (*de facto* measures of exposure) and demand for domestic credit also matter. While having no robust effect on relative skilled wages in finance, the coefficient of globalization in column 12 (0.0472) implies that a one standard deviation increase in financial globalization leads to an increase of relative skill intensity in finance by more than one half of a standard deviation, which is an economically large effect. In addition, a one standard deviation increase in domestic credit is associated with an increase of relative skilled wage and relative skill intensity in finance by 0.4 and 0.1 of a standard deviation, respectively. The economic magnitude of the effect of finance relative ICT intensity on skill intensity in finance is as large as that of domestic credit. Finally, while removing entry barriers decreases finance excess wage, deregulation of international capital flows as well as financial globalization increase finance excess wage significantly. Domestic credit and relative ICT intensity in finance do not have explanatory power in explaining finance excess wages.

[24] This effect is present only in low levels of privatization, as shown in appendix Table A1. Overall, the results of the nonlinear regulation specification are similar to Table 8. The significant difference is that when allowing for non-linear effects, the drop in the magnitude of the coefficient of relative ICT use in finance is much higher and it becomes statistically insignificant in all regressions. That is, controlling for financial deregulation, relative ICT use in finance does not have an effect on relative wages, relative skilled wages, or relative skill intensity in finance.

We now turn into predictive regressions (12). Table 10 shows that the only robust predictors for changes in relative wages and excess wages are changes in *de facto* financial globalization and in regulatory restrictions on international capital flows. Changes in relative demand for skill in finance are not related to financial globalization, and weakly to reductions in entry barriers.[25]

All the results in Table 9 and Table 10 are robust to dropping outliers in changes in the relative finance wages and relative finance skill intensity, as reported in the appendix.

Table 11 reports TSLS estimates of (12) using separately the instrument for reductions in regulatory restrictions on international capital flows, and for changes in relative ICT intensity in finance. In all these we find very large first stage partial F-stats, so we are not worried about weak instruments. In the appendix we report the first stage regressions, where, as expected, regulation of capital markets in levels is negatively correlated with deregulation (changes) in this dimension. In addition, The relative price of ICT investment is negatively correlated with the change in relative ICT capital intensity in finance. We cannot instrument for both endogenous variables, despite very high first stage partial F-stats and partial R-squared when doing so. The Shea (1997) partial R-squared are very small and much smaller than the standard R-squared; this indicates that our instruments do not separately identify both coefficients of interest. Instrumenting for only one endogenous variable at a time is not problematic here because of the weak correlation across all explanatory variables in changes; see Table 8.

In columns 1 to 4 we find that the causal effect of reductions in regulatory restrictions on international capital flows is concentrated on relative skilled wages and shows up mostly in the excess wage—not on the overall relative wage or on relative demand for skill in finance. The coefficients grow in magnitude and maintain statistical significance. Specifically, the coefficient of international capital flows on relative skilled wage regressions increases from 0.07 to 0.12, and from 0.09 to 0.14 in excess wage regressions. In contrast, whether we instrument for ICT or not, its effect is nil. However, when instrumenting for ICT the precision of the effect of *de facto* financial globalization diminishes somewhat.

To sum up, using several specifications and estimators, we find that financial globalization and financial deregulation of international capital flows are the most important factors driving relative wages in finance.

[25] This result holds also using the nonlinear regulation specification; see appendix Table A2.

3.4 Deregulation, relative ICT intensity in finance, and financial globalization

In the previous section, we show that the explanatory power of ICT in finance disappears when we control for financial reforms. In this subsection we stress the point that the incremental investment in ICT in finance, over and above what observed in the rest of the economy, is driven by financial deregulation. Our interpretation is that deregulation makes this incremental investment in ICT worthwhile, which in turn affects demand for skill in finance. However, in the presence of deregulation, this channel has no additional explanatory power. Financial globalization, measured by sum of foreign assets and liabilities as percentage of GDP here, could also be determined by financial deregulation. In particular, restrictions on international capital flows should be an important barrier to financial globalization.

We fit three specifications that differ in the right hand side variables: (1) only international capital flow regulation with only year fixed effects, (2) like (1) with year fixed effects, and (3) all reform indices and both country and year fixed effects. We focus on international capital flow regulation because we find this variable to be particularly important in explaining relative wages and skill intensity in finance. We also restrict the sample to have exactly the sample as the one we used in the level and predictive regressions; other samples deliver similar results. All right hand side variables are lagged three periods and all regressions include country fixed effects.

The results reported in columns 1 to 3 of Table 12 show that lower restrictions on international capital flows has a robust and significant explanatory power in explaining relative ICT use in finance across all specifications. Overall, these regressions can explain 70% of variation in relative ICT use in finance. To summarize, the results are consistent with the idea that financial deregulation made investment in ICT in finance profitable.

The results reported in columns 4 to 6 of Table 12 strongly suggest that lower restrictions on international capital flows are an important determinant of the *de facto* measure of financial globalization. In addition, relaxing entry barriers, removing restrictions on interest rates, and banking supervision have a positive impact on globalization, which all suggest that financial reforms facilitate movement of capital across borders. We also find a negative effect of directed credit on globalization. Since this variable captures constraints on domestic credit, removing these constraints may lower reliance on international capital markets in favor of more efficient domestic markets. Overall, the results suggest that financial reforms are important determinants of globalization.

4 Finance wages and brain drain

Given the findings above, this is a natural to ask whether high wages in finance attract talent from other parts of the economy. Addressing the effects of drawing talented workers to finance, and making the distinction between social and private returns are beyond the scope of this paper. It is very difficult to empirically characterize allocative effects between activities within an economy. Instead, in this section we ask whether high wages in finance lure qualified workers from other countries. Here, it is relatively clear that attracting skilled workers from other countries has detrimental effects on the country of origin—i.e. brain drain. We restrict attention to immigration within a sample of 15 industrialized countries, where remittances and backward knowledge spillovers to the country of origin are not likely to be large.

We find that variation in skilled wages in finance—over and above overall skilled wages—predict skilled immigration and employment in finance and therefore affect the allocation of immigration. We do not find evidence for this for unskilled immigrants in finance, or for skilled immigrants in other sectors of the economy. This raises concerns that high wages in finance cause brain drain across borders.

4.1 Immigration data

Unfortunately, to the best of our knowledge there are no comprehensive data sets that provide information on employment both before and after immigration. Moreover, data on immigration flows, rather than stocks are also scant. Therefore, we rely on data on bilateral immigration *stocks* for 15 OECD countries in 2000.[26] We restrict attention to immigration flows within this group of countries in order to stay close to the concept of luring qualified workers. Moreover, this way we restrict the incidence of remittances and backward knowledge spillovers to the country of origin. All wages are calculated from the EU KLEMS database.

Migration stocks in a given sector in a destination country are classified by source country and education level. We focus on highly educated workers (attaining a bachelors degree from a four year college or from university), but we also compare our results to lower levels of education. Table 13 shows that there is considerable heterogeneity in immigration stocks by destination. Panel A reports statistics for skilled workers. The first set of columns report the distribution of immigrants

[26] The countries are: Australia, Austria, Canada, Denmark, Spain, Finland, France, Hungary, Ireland, Italy, Luxemburg, Portugal, Sweden, United Kingdom, United States. See appendix for more details on the sample. Data downloaded from: http://stats.oecd.org/Index.aspx?DatasetCode=MIG#

in their destination countries (where they moved to), while the latter set of columns report the distribution of those immigrants by source country (where they came from).

Panel A documents very high skill intensity of immigrants in finance as a share in total immigrants working in finance (except for France). Destination country size plays a role, as seen in the shares of skilled immigrants in total finance immigration. But receiving relatively more skilled immigrants in finance is virtually unrelated to their share in finance skilled employment or to their share in overall skilled immigration to the destination. This indicates that finance-specific forces help predict immigration employment in finance. This is manifested in two correlations: The high correlation between the share of skilled immigrants in skilled employment in finance and their share in total skilled immigration flows (0.84); in contrast, the share of skilled finance immigration in total skilled immigration in a destination country is virtually uncorrelated with the same concept for the same country as a source.

Panel B documents similar statistics for all immigrants. Given the relatively high skill intensity of immigration to finance it is not surprising to find similar characteristics here. Yet, while we find below that finance wages affect skilled finance immigration, finance wages have no predictive power on other immigrants.

4.2 Finance wages cause brain drain

We start by fitting the following regression, which resembles a trade gravity equation (for example, see Ortega and Peri (2012)):

$$\ln m_{od}^{H,fin} = \alpha_o + \beta \ln w_d^{H,fin} + \gamma \ln w_d^{H,nonfin} + \delta' X_{od} + \varepsilon_{od} \ . \tag{13}$$

Here m_{od} denotes immigration stock in destination d from origin o, H denotes skilled workers, fin denotes employment in finance, and $nonfin$ denotes employment outside finance and agriculture. Here X are standard "gravity" control variables: Common language and contiguity (common border) indicators, and the log of distance between origin and destination capital cities.[27] α_o are origin fixed effects. Since we wish to estimate the effect of wages in the destination, we cannot add destination fixed effects. To help address reverse causality we fit these regressions using one-year lagged explanatory variables (there is no time dimension in X); results are qualitatively similar for longer lags. We add overall skilled wages in non-finance non-agriculture sectors in the destination

[27] Data from CEPII, downloaded from: http://www.cepii.fr/anglaisgraph/bdd/distances.htm#. Using different measures of distance from the CEPII dataset hardly affects the results.

$w_d^{H,nonfin}$ in order to see whether conditions that are correlated with average wages predict finance immigration, rather than finance wages *per se*. Descriptive statistics for the variables are reported in Table 14.

Regression results of fitting (13) to data are reported in Table 15, columns 1 and 2. The message from Panel A is that high skilled wages in finance predict more skilled immigration into finance, even after controlling for skilled wages elsewhere in the destination country. In contrast, low skilled immigration does not respond to low skilled wages in finance, as seen in Panel B. In column (2) in Panel A we estimate (13) and find an elasticity of 2.3 between finance wages and immigration, controlling for aggregate wages. A one standard deviation increase in log finance wages increases finance immigration by 0.54 log points, which is 23% of the standard deviation of log skilled immigration (2.32; see Table 14).

We compare this result to a similar regression for unskilled workers in Panel B (replace all H superscripts with L in (13)). We find that unskilled wages in finance do not predict low skilled immigration to finance once low skilled wages elsewhere are controlled for. The coefficient to $\ln w_d^{L,fin}$ is small and statistically insignificant. This is somewhat surprising: If unskilled workers do not have specific human capital and operate in a competitive environment, then differences in industry wages should have larger effects for them—but this is not the case in the data.[28] It seems that for immigration, it is the skilled workers who respond more to industry wage differentials. This finding is strengthened in the next specification, which we find more appealing.

In the next specification we replace $m_{od}^{H,fin}$ by its share in the overall skilled immigration flow of skilled immigration $m_{od}^{H,fin}/m_{od}^{H}$

$$\left(\frac{m_{od}^{H,fin}}{m_{od}^{H}}\right) = \alpha_o + \beta \ln w_d^{H,fin} + \gamma \ln w_d^{H,nonfin} + \delta' X_{od} + \varepsilon_{od} \ . \tag{14}$$

This specification is preferable for estimating the effect of finance wages on the attractiveness of the sector. It also alleviates the concern that wages in finance may be correlated with overall attractiveness of the country, thus creating a concern for endogeneity in (13).

In columns 3 and 4 of Table 15 we find a similar pattern as in columns 1 and 2: Finance wages increase skilled finance immigration even as a share of overall skilled immigration. A one standard deviation increase in log finance wages increases the share finance immigration by 3.2 percent points, compared to a standard deviation of 7 percent points, i.e. 46% of the variation. As before, when

[28] In Table A6 in the appendix we find that this pattern is common to other sectors as well.

we compare this to the corresponding regression for unskilled workers in Panel B (replace all H superscripts with L in (14)), we find that unskilled wages in finance have no predictive power for low skilled immigration in finance once overall low skilled wages are controlled for.

Our third specification asks whether the relative skilled wage within finance has an effect on immigrant skill intensity in finance over and above the relative skilled wage in the rest of the economy:

$$\left(\frac{m_{od}^{H,fin}}{m_{od}^{L,fin}}\right) = \alpha_o + \beta\left(\frac{w_d^{H,fin}}{w_d^{L,fin}}\right) + \gamma\left(\frac{w_d^{H,nonfin}}{w_d^{L,nonfin}}\right) + \delta' X_{od} + \varepsilon_{od} \ , \tag{15}$$

In column 6 we see that relative skilled wages within finance ($w_d^{H,fin}/w_d^{L,fin}$) have a stronger effect on the skill intensity of finance immigration ($m_{od}^{H,fin}/m_{od}^{L,fin}$) relative to the effect of relative skilled wages outside of farm and finance ($w_d^{H,nonfin}/w_d^{L,nonfin}$). A one standard deviation increase in $w_d^{H,fin}/w_d^{L,fin}$ increases $m_{od}^{H,fin}/m_{od}^{L,fin}$ by 0.34, compared to a standard deviation of 1.24, i.e. 28% of the variation—this compared to 20% for $w_d^{H,nonfin}/w_d^{L,nonfin}$.

Finally, we ask whether immigration stocks in other sectors follows similar patterns as in finance. We fit equations (13)–(15) to data on skilled and unskilled immigrants in other sectors, using corresponding wages. We report results on skilled immigration in Table 16. Results for unskilled immigrants are relegated to the appendix.

The relationships between wages and immigrant employment in other sectors differ from those in finance. First, skilled wages in Real Estate and Business Services have no predictive power for skilled immigration there. Second, although in the simple "gravity" specification (13) we find similar results to finance in Health Services and Manufacturing, in the normalized gravity specification (14) the coefficients to sector wages turn negative. This justifies our approach to normalize sector-specific immigration flows by overall immigration, thus addressing concerns for endogeneity. Third, although relative skilled wages in health services predict skill intensity of immigrant employment—they do not for manufacturing or for real estate and business services.

Overall, we find compelling evidence that high skilled wages in finance predict skilled immigration employment in finance and affect the allocation of immigration. We do not find strong evidence for this for unskilled immigrants in finance, or for skilled immigrants in other sectors of the economy. This raises concerns that high wages in finance cause brain drain across borders, with detrimental effects on the countries of origin.

5 Concluding remarks

We study the evolution of wages and human capital in the finance industry in a set of developed economies in 1970–2005. Relative wages and skill intensity in finance are generally increasing, but there is wide variation across countries. We find that half of the countries in our sample see increases, while the remainder are split between decreases and mixed trends. We find similar results for skill intensity, but these changes in composition do not explain relative wages in finance. Most of the variation is driven by within-group wage changes, in particular skilled wages in finance relative to skilled wages in the rest of the private sector.

We then seek to explain these patterns. We find that financial deregulation and financial globalization are the most important determinants of relative wages and skill intensity in finance. In addition, we find that although relative ICT intensity in finance is correlated with the allocation and compensation of human capital in finance, this relationship is not causal. Instead, when controlling for financial deregulation, ICT intensity has no explanatory power. The differential investment in ICT in finance is, in fact, determined by financial deregulation.

We also document that increasing wages in finance affects the cross border allocation of talent. We find that when finance pays higher wages, it attract more skilled immigrants. This seems to suggest a negative externality that countries with high finance wages imposes on those with lower wages in finance. We do not find comparable effects for unskilled workers or other industries.

Can high power incentives or scale effects explain the rise of relative wages in finance? Cheng, Hong, and Scheinkman (2010) find that residual compensation chief executive officers (CEOs) and risk-taking are positively correlated across finance firms in 1992–2008, suggesting that high-powered incentives help explain wage variation *within* finance. However, this does not address the overall trends in finance wages. Moreover, Philippon and Reshef (2012) show that scale effects explain little of the wage differential of CEOs in finance versus CEOs in other sectors after 1990, the period of financial deregulation. Understanding the mechanisms through which deregulation affects wages in finance is an important field of future research.

Although we have shown that financial deregulation and globalization leads to higher skill intensity and wages in the finance sector, we cannot provide evidence on whether these are socially optimal. This requires a structural model far beyond the scope of this paper.[29] The work of Kneer

[29] Philippon (2007) analyzes the case of endogenous growth with financial intermediation and innovation in the non-financial sector. Michalopoulos, Laeven, and Levine (2009) model real and financial innovation in a symmetric way.

(2013b), Martinsson (2013), Cecchetti and Kharroubi (2012) and Arcand, Berkes, and Panizza (2012) suggests that higher wages in finance, through their effect on talent absorption, may cause potential harm to some industries. However, these studies only estimate difference-in-difference effects on some sectors versus others, and their results are hard to interpret. In light of the recent financial crisis, an important and challenging task for future research is to model the social value and cost of new financial products.

Appendix

A EU KLEMS database

All data are available from www.euklems.net. We use the 2008 release. The overall sample covers 22 countries: Australia (1970–2005), Austria (1970–2005), Belgium (1970–2005), Canada (1970–2004), Czech Republic (1995–2005), Denmark (1970–2005), Spain (1970–2005), Finland (1970–2005), France (1970–2005), Germany (1970–2005), Hungary (1991–2005), Ireland (1970–2005), Italy (1970–2005), Japan (1970–2005), Korea (1970–2005), Luxembourg (1970–2005), Netherlands (1970–2005), Portugal (1970–2005), Slovenia (1995–2005), Sweden (1970–2005), United Kingdom (1970–2005), United States (1970–2005). For the United States we use NAICS based data (1977–2005) and complete it with SIC based data (1970–2005) when NAICS based data are missing. Differences in series that we use between NAICS and SIC based methodology are not significant. Not all series are available for all countries and years.

B Derivation of benchmark wage

The finance relative wage can be written as

$$\omega_{fin,t} = \frac{\overline{w}_{fin,t}}{\overline{w}_{nffp,t}} = \frac{w_{fin,t}\left(1-h_{fin,t}\right)+s_{fin,t}h_{fin,t}}{w_{nffp,t}\left(1-h_{nffp,t}\right)+s_{nffp,t}h_{nffp,t}} = \frac{w_{fin,t}}{w_{nffp,t}} \cdot \frac{1+h_{fin,t}\left(\frac{s_{fin,t}}{w_{fin,t}}-1\right)}{1+h_{nffp,t}\left(\frac{s_{nffp,t}}{w_{nffp,t}}-1\right)} \ ,$$

where h is the employment share of skilled labor, w and s are unskilled and skilled wages. If $w_{fin,t} = w_{nffp,t}$ and $s_{fin,t} = s_{nffp,t}$, then we get the expression for the benchmark wage in the text,

$$\widehat{\omega}_{fin,t} = \frac{1+h_{fin,t}\pi_{nffp,t}}{1+h_{nffp,t}\pi_{nffp,t}} \ ,$$

where $\pi_{nffp,t} = s_{nffp,t}/w_{nffp,t} - 1$.

C Quantity indices for non-farm, non-finance private sector (NFFP)

Capital quantity indices for the non-farm, non-finance private sector (NFFP) are given by

$$Q_{nffp,t} = \frac{Q_{agg,t} * v_{agg,1995} - \sum_{i\in\{farm,fin,public\}} Q_{i,t} * v_{i,1995}}{v_{agg,1995} - \sum_{i\in\{farm,fin,public\}} v_{i,1995}} \ ,$$

where $Q_{i,t}$ is the quantity index for sector i, $v_{i,1995}$ is the nominal value of the capital stock in 1995. This preserves the properties of the quantity indices since each quantity index is conceptually given by

$$Q_{i,t} = 100 \cdot \frac{q_{i,t}}{q_{i,1995}} = 100 \cdot \frac{q_{i,t}p_{i,1995}}{q_{i,1995}p_{i,1995}} = 100 \cdot \frac{q_{i,t}p_{i,1995}}{v_{i,1995}} \ ,$$

where q and p are real quantity and price, respectively. In particular, $Q_{nffp,1995} = 100$.

D Derivation of complementarity equation

Suppose that capital is quasi-fixed and that there are two variable inputs: skilled and unskilled labor, h and l, respectively (this naturally extends to k variable inputs). So variable costs are given by $c = w_h \cdot h + w_l \cdot l$. If h and l are the argmin of costs, then c is the cost function. The logarithm of c can be approximated by a translog cost function:

$$\begin{aligned}\ln(c) = {} & \alpha_h \ln(w_h) + \alpha_l \ln(w_l) + \alpha_k \ln(k) + \alpha_y \ln(y) + \\ & + \frac{1}{2}\left[\beta_{hh} \ln(w_h)^2 + \beta_{hl} \ln(w_h) \ln(w_l) + \beta_{lh} \ln(w_l) \ln(w_h) + \beta_{ll} \ln(w_l)^2 + \beta_{kk} \ln(k)^2 + \beta_{yy} \ln(y)^2\right] \\ & + \gamma_{hk} \ln(w_h) \ln(k) + \gamma_{hy} \ln(w_h) \ln(y) + \gamma_{lk} \ln(w_l) \ln(k) + \gamma_{ly} \ln(w_l) \ln(y) + \gamma_{ky} \ln(k) \ln(y) \ ,\end{aligned}$$

where k is capital and y is output. Symmetry implies $\beta_{hl} = \beta_{lh}$.

By Shephard's lemma, $\partial c / \partial w_h = h$, so that the cost share of skilled labor is

$$S \equiv \frac{w_h h}{c} = \frac{\partial \ln(c)}{\partial \ln(w_h)} = \frac{\partial c}{\partial w_h} \frac{w_h}{c} \ .$$

Using this in the translog we get

$$S = \alpha_h + \beta_{hh} \ln(w_h) + \beta_{hl} \ln(w_l) + \gamma_{hk} \ln(k) + \gamma_{hy} \ln(y) \ .$$

By linear homogeneity of cost with respect to prices, cost shares are homogenous of degree zero. Therefore $\beta_{hh} + \beta_{hl} = 0$. By linear homogeneity of the production function we have $\gamma_{hk} + \gamma_{hy} = 0$ (increasing all inputs by same factor increases output by same factor, but this should not affect the cost share). Using these two properties gives

$$S = \alpha + \beta \ln\left(\frac{w_h}{w_l}\right) + \gamma \ln\left(\frac{k}{y}\right) \ ,$$

where $\gamma = \gamma_{hk}$. If the production function is not linearly homogenous, this becomes

$$S = \alpha + \beta \ln\left(\frac{w_h}{w_l}\right) + \gamma \ln\left(\frac{k}{y}\right) + \delta \ln(y) \ ,$$

where $\gamma = \gamma_{hk}$ and $\delta = \gamma_{hk} + \gamma_{hy}$.

E Immigration data and sample

Data on immigration stocks in a sample of 15 countries in 2000 by country of origin and sector of employment in the destination country were downloaded from the OECD *StatExtracts* website: http://stats.oecd.org/Index.aspx?DatasetCode=MIG#. Sectors of immigrants' employment in Belgium and The Netherlands are not coded and therefore we cannot distinguish immigrants in different sectors in these two countries, so they are not part of our data. The data does not include Germany at all. Thus, the sample covers 15 countries: Australia, Austria, Canada, Denmark, Spain, Finland, France, Hungary, Ireland, Italy, Luxemburg, Portugal, Sweden, United Kingdom, United States.

There are potentially 210 bilateral observations ($15 \times 15 - 15 = 210$). There are 17 missing observations for skilled immigrants in finance, and another 17 missing observations for unskilled immigrants in finance (skilled have tertiary education; unskilled are all the rest). These missing

observations are zeros and since we cannot employ them in our estimation, they are dropped. This gives us 193 bilateral observations of immigration stocks in working in finance, either skilled or unskilled. The 17 missing observations on each type of worker only partially overlap. Therefore, in specifications that use data on both we lose 10 additional observations because only 7 missing observations are common. In appendix Table A5 we report the incidence of missing observations.

When we estimate migration gravity equations using TSLS, we lose 14 additional observations because deregulation data for Luxemburg are missing; this gives us 179 observations in those regressions $(193 - 14 = 179)$.

Samples for immigration stocks employed in other sectors of the economy vary in similar ways.

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Table 1: Finance Relative Wages and Relative Skill Intensity

A. Finance Relative Wage

	Levels				Changes			
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	Total
Australia	1.34	0.61	1.69	1.97	-0.73	1.08	0.28	0.63
Austria	1.74	1.65	1.69	1.63	-0.09	0.04	-0.06	-0.11
Belgium	1.62	1.75	1.66	1.59	0.12	-0.08	-0.08	-0.04
Canada*	1.21	1.28	1.35	1.59	0.07	0.07	0.24	0.38
Czech Republic			1.78	2.10			0.32	0.32
Denmark	1.29	1.29	1.45	1.55	0.00	0.16	0.10	0.26
Finland	1.12	1.20	1.36	1.33	0.09	0.16	-0.03	0.22
France	1.49	1.31	1.48	1.62	-0.17	0.17	0.14	0.13
Germany	1.41	1.38	1.45	1.57	-0.03	0.07	0.12	0.16
Hungary			1.51	1.89			0.38	0.38
Ireland	1.86	1.53	1.64	1.51	-0.33	0.10	-0.12	-0.35
Italy	3.15	2.02	2.11	1.96	-1.14	0.09	-0.15	-1.19
Japan	1.53	1.66	1.73	1.66	0.13	0.07	-0.07	0.13
Korea	2.48	1.79	1.63	1.34	-0.69	-0.16	-0.29	-1.14
Luxemburg	1.23	1.90	1.99	2.39	0.67	0.09	0.40	1.16
Netherlands	1.28	1.48	1.60	1.79	0.20	0.12	0.19	0.51
Portugal	2.80	2.31	2.68	2.73	-0.49	0.37	0.05	-0.07
Slovenia			1.65	1.44			-0.21	-0.21
Spain	1.58	1.84	1.90	2.21	0.25	0.07	0.30	0.62
Sweden	1.50	1.29	1.39	1.52	-0.21	0.10	0.13	0.02
United Kingdom	1.39	1.76	1.30	1.55	0.37	-0.46	0.25	0.16
United States	1.13	1.24	1.55	1.90	0.11	0.32	0.35	0.78
Average	1.638	1.541	1.663	1.765	-0.097	0.125	0.102	0.126

B. Finance Relative Skilled Wage

	Levels				Changes			
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	Total
Australia		0.61	1.59	1.83		0.98	0.23	1.21
Austria		1.60	1.63	1.59		0.03	-0.04	0.00
Belgium		1.69	1.48	1.45		-0.21	-0.03	-0.24
Canada*	0.95	1.06	1.24	1.48	0.11	0.18	0.23	0.53
Czech Republic			1.66	1.85			0.19	0.19
Denmark		1.25	1.41	1.39		0.16	-0.02	0.13
Finland	0.92	0.98	1.21	1.18	0.06	0.22	-0.03	0.26
France		1.04	1.25	1.33		0.21	0.08	0.29
Germany			1.06	1.15			0.10	0.10
Hungary			1.41	1.49			0.08	0.08
Ireland			1.47	1.28			-0.19	-0.19
Italy	3.68	2.39	2.09	1.53	-1.29	-0.30	-0.56	-2.15
Japan	1.27	1.40	1.44	1.41	0.13	0.04	-0.03	0.15
Korea	1.83	1.60	1.60	1.57	-0.23	0.00	-0.03	-0.26
Luxemburg			1.81	2.11			0.30	0.30
Netherlands		1.53	1.47	1.56		-0.06	0.09	0.03
Portugal			1.19	1.18			-0.01	-0.01
Slovenia			1.40	1.10			-0.30	-0.30
Spain		1.22	1.22	1.41		-0.01	0.20	0.19
Sweden		1.29	1.41	1.64		0.12	0.23	0.35
United Kingdom	1.05	1.49	1.26	1.65	0.44	-0.22	0.39	0.60
United States		1.21	1.41	1.74		0.20	0.34	0.53
Average	1.616	1.358	1.441	1.496	-0.129	0.089	0.056	0.081

C. Finance Relative Skill Intensity

	Levels				Changes			
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	Total
Australia		0.061	0.113	0.136		0.052	0.023	0.075
Austria		-0.019	-0.009	0.026		0.010	0.035	0.045
Belgium		0.045	0.096	0.131		0.051	0.035	0.086
Canada*	0.015	0.036	0.083	0.123	0.021	0.048	0.040	0.108
Czech Republic			0.128	0.162			0.034	0.034
Denmark		-0.006	0.006	0.041		0.012	0.035	0.047
Finland	0.122	0.174	0.204	0.240	0.052	0.030	0.036	0.118
France		0.021	0.045	0.101		0.025	0.056	0.081
Germany			0.012	0.017			0.005	0.005
Hungary			0.124	0.182			0.058	0.058
Ireland			0.142	0.226			0.084	0.084
Italy	0.062	0.065	0.066	0.024	0.003	0.001	-0.042	-0.038
Japan	0.100	0.142	0.218	0.303	0.042	0.076	0.084	0.203
Korea	0.089	0.066	0.031	-0.046	-0.022	-0.035	-0.077	-0.134
Luxemburg			0.131	0.141			0.011	0.011
Netherlands		-0.009	0.018	0.093		0.027	0.075	0.102
Portugal			0.120	0.231			0.111	0.111
Slovenia			0.118	0.155			0.036	0.036
Spain		0.040	0.144	0.293		0.104	0.149	0.253
Sweden		0.086	0.110	0.135		0.025	0.025	0.050
United Kingdom	0.019	0.062	0.056	0.085	0.043	-0.006	0.029	0.066
United States		0.093	0.128	0.129		0.036	0.001	0.036
Average	0.068	0.057	0.095	0.133	0.023	0.030	0.038	0.065

Notes: The table reports wages and skill intensity in finance relative to the nonfarm, non-finance private sector (NFFP) in different years and the changes between those years. The total change is the sum of changes in the preceding three columns. Skilled workers are consistently defined across countries as those who hold a university-equivalent bachelors degree or more. * Data for Canada in 2005 is missing and is replaced in this table by data for Canada in 2004. Data: EU KLEMS.

Table 2: Decomposition of Changes in Finance Relative Wage

Country	Sample	Change in finance relative wage	Within share	Between share
Australia	1982 - 2005	1.30	0.87	0.13
United States	1970 - 2005	0.78	0.65	0.35
Spain	1980 - 2005	0.52	0.76	0.24
Netherlands	1979 - 2005	0.45	0.52	0.48
Canada	1970 - 2004	0.43	0.64	0.36
Luxemburg	1992 - 2005	0.42	0.76	0.24
Finland	1970 - 2005	0.40	0.50	0.50
Hungary	1995 - 2005	0.38	0.56	0.44
Denmark	1980 - 2005	0.36	0.78	0.22
France	1980 - 2005	0.32	0.57	0.43
Czech Republic	1995 - 2005	0.32	0.59	0.41
Sweden	1981 - 2005	0.30	0.61	0.39
Portugal	1992 - 2005	0.29	0.67	0.33
Japan	1973 - 2005	0.26	0.10	0.90
Ireland	1988 - 2005	0.26	0.04	0.96
Germany	1991 - 2005	0.12	0.81	0.19
United Kingdom	1970 - 2005	-0.02	16.39	-15.39
Austria	1980 - 2005	-0.04	4.70	-3.70
Belgium	1980 - 2005	-0.11	2.42	-1.42
Slovenia	1995 - 2005	-0.21	1.49	-0.49
Korea	1970 - 2005	-0.52	1.18	-0.18
Italy	1970 - 2005	-1.20	1.03	-0.03

Notes: Countries are sorted by the change in finance relative wage. The decomposition for each country is based on equation (2) in the text. The within share captures the contribution of wage changes within skill groups (high skilled, low skilled); the between share captures the contribution of changes of skill composition. Data: EU KLEMS.

Table 3: Decomposition of Changes in Skilled Relative Wage

Country	Sample	Change in skilled relative wage	Within share	Between share	Finance share
United States	1980 - 2005	0.58	0.98	0.02	0.22
Luxemburg	1992 - 2005	0.55	0.87	0.13	0.65
Portugal	1992 - 2005	0.33	0.98	0.02	0.19
Canada	1980 - 2004	0.33	0.98	0.02	0.30
Hungary	1995 - 2005	0.32	1.03	-0.03	0.01
Ireland	1988 - 2005	0.28	0.91	0.09	0.56
Germany	1991 - 2005	0.26	1.00	0.00	0.10
Italy	1980 - 2005	0.20	1.19	-0.19	-0.61
Czech Republic	1995 - 2005	0.08	1.05	-0.05	0.16
Australia	1982 - 2005	0.08	1.05	-0.05	1.57
Japan	1980 - 2005	-0.04	0.80	0.20	0.73
Sweden	1981 - 2005	-0.08	1.02	-0.02	-0.33
Spain	1980 - 2005	-0.10	1.05	-0.05	-0.48
Slovenia	1995 - 2005	-0.12	1.04	-0.04	0.11
Belgium	1980 - 2005	-0.14	1.03	-0.03	0.10
Finland	1980 - 2005	-0.15	0.98	0.02	0.23
Austria	1980 - 2005	-0.19	1.15	-0.15	-0.22
United Kingdom	1980 - 2005	-0.23	1.00	0.00	-0.08
Denmark	1980 - 2005	-0.32	1.03	-0.03	-0.13
Netherlands	1980 - 2005	-0.44	1.07	-0.07	-0.19
France	1980 - 2005	-0.55	1.01	-0.01	-0.03
Korea	1980 - 2005	-0.74	1.01	-0.01	0.07

Notes: Countries are sorted by the change in skilled relative wage, which is defined as the wage of university-educated workers divided by the wage other workers, both in the nonfarm private sector (including finance). The decomposition for each country is based on equation (XXXX) in the text. The within share captures the contribution of wage changes within skill groups (high skilled, low skilled); the between share captures the contribution of changes of skill composition; the finance share captures the overall contribution of finance, whether from within-finance changes or changes in the allocation of skilled workers to finance. Data: EU KLEMS.

Table 4: Finance Relative ICT Capital Share

	Finance Relative ICT Share				Changes			
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	Total
Australia	0.008	0.019	0.061	0.391	0.012	0.042	0.330	0.383
Austria		0.016	0.048	0.178		0.032	0.130	0.162
Belgium								
Canada*	-0.054	-0.015	0.012	-0.043	0.039	0.027	-0.055	0.011
Czech Republic			0.168	0.293			0.125	0.125
Denmark	0.006	0.041	0.125	0.592	0.035	0.085	0.466	0.586
Finland	0.075	0.146	0.350	0.836	0.071	0.204	0.486	0.761
France								
Germany			0.077	0.194			0.117	0.117
Hungary								
Ireland								
Italy	-0.005	0.004	0.014	0.137	0.009	0.010	0.122	0.141
Japan	0.046	0.047	0.122	0.306	0.001	0.075	0.184	0.260
Korea		0.085	0.153	0.186		0.069	0.033	0.102
Luxemburg								
Netherlands	0.008	0.019	0.066	0.300	0.011	0.047	0.234	0.292
Portugal			0.112	0.101			-0.010	-0.010
Slovenia			-0.027	0.284			0.311	0.311
Spain								
Sweden			0.163	0.276			0.113	0.113
United Kingdom	0.035	0.015	0.129	0.303	-0.020	0.114	0.174	0.268
United States	0.014	0.054	0.146	0.355	0.040	0.092	0.209	0.341
Average	0.015	0.039	0.107	0.293	0.022	0.072	0.186	0.248

Notes: The table reports ICT (Information and Communication Technology) shares in real capital stock in finance minus the ICT share in the nonfarm, non-finance private sector (NFFP) in different years and the changes between those years. The Total change is the sum of changes in the preceding three columns. * Data for Canada in 2005 is missing and is replaced in this table by data for Canada in 2004. Data: EU KLEMS.

Table 5: Financial Regulation

A. Indicators

	Directed Credit		Interest Rate Controls		Entry Barriers, Activity Restrictions		Banking Supervision		Privatization		International Capital Flows	
	1973*	1995	1973*	1995	1973*	1995	1973*	1995	1973*	1995	1973*	1995
Australia	0	3	0	3	0	2	0	3	0	3	0	3
Austria	1	1	0	3	0	3	0	1	0	2	1	3
Belgium	2	3	1	3	1	3	1	2	2	2	0	3
Canada	2	3	3	3	0	3	0	3	3	3	2	3
Czech Republic*	1	1	0	3	3	2	0	1	0	2	0	0
Denmark	2	2	0	3	1	3	0	3	2	3	1	3
Finland	2	3	1	3	2	3	0	1	1	1	0	3
France	0	3	1	3	1	3	0	3	1	2	1	3
Germany	3	3	3	3	1	3	1	3	1	1	2	3
Hungary*	1	1	3	3	2	2	0	1	0	0	0	2
Ireland	1	3	1	3	3	3	0	3	3	3	1	3
Italy	0	2	1	3	0	3	0	2	0	1	1	3
Japan	1	2	0	3	0	3	0	1	2	2	2	3
Korea	0	3	0	3	0	2	0	1	1	0	1	2
Luxemburg**												
Netherlands	3	3	3	3	3	3	0	2	3	3	0	3
Portugal	0	1	0	3	0	3	0	2	1	1	1	3
Slovenia**												
Spain	1	3	1	3	1	3	1	3	2	2	1	3
Sweden	0	3	0	3	1	3	0	2	3	3	1	3
United Kingdom	2	3	2	3	1	3	0	2	2	3	1	3
United States	2	3	0	3	1	1	1	3	3	3	3	3

B. Changes in Indicators

	Directed Credit	Interest Rate Controls	Entry Barriers, Activity Restrictions	Banking Supervision	Privatization	International Capital Flows
Australia	3	3	2	3	3	3
Austria	0	3	3	1	2	2
Belgium	1	2	2	1	0	3
Canada	1	0	3	3	0	1
Czech Republic*	0	3	-1	1	2	0
Denmark	0	3	2	3	1	2
Finland	1	2	1	1	0	3
France	3	2	2	3	1	2
Germany	0	0	2	2	0	1
Hungary*	0	0	0	1	0	2
Ireland	2	2	0	3	0	2
Italy	2	2	3	2	1	2
Japan	1	3	3	1	0	1
Korea	3	3	2	1	-1	1
Luxemburg**						
Netherlands	0	0	0	2	0	3
Portugal	1	3	3	2	0	2
Slovenia**						
Spain	2	2	2	2	0	2
Sweden	3	3	2	2	0	2
United Kingdom	1	1	2	2	1	2
United States	1	3	0	2	0	0

Notes: The table reports financial regulation indicators and changes. Higher values indicate less restrictions or financial liberalization, except for Banking Supervision. For Banking Supervision higher values indicate adopting a capital adequacy ratio based on the Basle standard; banking supervisory agency independence; and whether the banking supervisory agency covers all financial institutions without exception. * Data for the Czech Republic and Hungary start in 1990. ** Data for Luxemburg and Slovenia are not available. Source: Abiad, Detragiache and Tressel (2008) and authors' calculations.

Table 6: ICT and complementarity with high skilled workers

	Dependent variable: Wage bill share of skilled workers					
	Finance	Aggregate	NFFP	Finance	Aggregate	NFFP
ln(wH/wL)	0.254***	-0.0266	-0.0116	0.229***	0.0543***	0.0355**
	(0.0314)	(0.0237)	(0.0241)	(0.0252)	(0.0133)	(0.0158)
ln(ICT/Q)	0.0562***	0.0472***	0.0465***	0.0409***	0.0227***	0.0273***
	(0.00234)	(0.00129)	(0.00263)	(0.00291)	(0.00212)	(0.00331)
ln(NonICT/Q)	-0.0946***	0.00367	-0.0475***	-0.0671***	0.0636***	0.0686***
	(0.00901)	(0.0224)	(0.00656)	(0.00628)	(0.0171)	(0.0137)
ln(Q)				0.0751***	0.120***	0.0898***
				(0.00923)	(0.00919)	(0.0104)
Observations	456	456	353	456	456	353
Number of countries	22	22	16	22	22	16
Test of equality of ln(ICT/Q) coefficient with finance						
Chi-squared		11.45	7.61		25.59	9.55
p-value		0.001	0.006		0.000	0.002

Notes: All regressions are estimated with two stage least squares, and include country fixed effects. Here wH and wL are wages of skilled and all other workers, respectively; ICT and NonICT are quantity indices for ICT and non-ICT capital, respectively; and Q is the output quantity index. See text for details on the construction of quantity indices for the NFFP sector. The sample for NFFP reduces due to data limitations. Data: EU KLEMS. Test statistics are obtaied by pooling data series for aggregate or NFFP with finance. Robust standard errors in parentheses. *** p<0.01.

Table 7: Descriptive Statistics for Level and Predictive Regressions

A. For level regressions

	Mean	Std. Dev.	Min	Max
Finance relative wage (t)	1.51	0.35	0.61	3.01
Finance skilled relative wage (t)	1.44	0.42	0.61	3.62
Finance relative skill intensity (t)	0.07	0.06	-0.03	0.23
Finance excess wage (t)	0.52	0.34	-0.43	2.01
Finance relative ICT intensity (t-3)	0.06	0.07	-0.05	0.48
Domestic bank credit (t-3)	1.00	0.55	0.36	2.92
Financial globalization (t-3)	0.09	0.68	-1.55	1.73

B. For predictive regressions

	Mean	Std. Dev.	Min	Max
Change in finance relative wage (t,t+3)	0.02	0.15	-0.58	0.75
Change in finance skilled relative wage (t,t+3)	0.02	0.16	-0.76	0.70
Change in finance relative skill intensity (t,t+3)	0.01	0.01	-0.05	0.05
Change in finance excess wage (t,t+3)	0.01	0.15	-0.58	0.74
Change in finance relative ICT intensity (t-3,t)	0.02	0.03	-0.06	0.18
Change in domestic bank credit (t-3,t)	0.07	0.14	-0.61	0.89
Change in financial globalization (t-3,t)	0.18	0.20	-0.61	0.93

Notes: Statistics are computed for 241 observations. The range for t is 1976-1998. This is due to our choice to use financial regulation variables in 1973-1995. Wage, skill and ICT variables are calculated based on EU KLEMS data. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). Statistics on the financial reform indices are reported in Table 4.

Table 8: Correlations for Level and Predictive Regressions

A. Correlations across variables in levels (t-3)

	Finance relative ICT intensity	Domestic bank credit	Financial globalization	International Capital Flows	Privatization	Entry Barriers, Activity Restrictions	Banking Supervision	Directed Credit	Interest Rate Controls
Finance relative ICT intensity	1								
Domestic bank credit	0.05	1							
Financial globalization	0.08	-0.07	1						
International Capital Flows	0.10	0.45	0.44	1					
Privatization	0.08	0.23	0.34	0.49	1				
Entry Barriers, Activity Restrictions	0.46	0.06	0.65	0.36	0.41	1			
Banking Supervision	0.11	0.18	0.42	0.56	0.44	0.42	1		
Directed Credit	0.42	0.09	0.49	0.47	0.52	0.61	0.49	1	
Interest Rate Controls	0.05	0.22	0.54	0.48	0.26	0.38	0.38	0.37	1

B. Correlations across variables in changes (t,t-3)

	Finance relative ICT intensity	Domestic bank credit	Financial globalization	International Capital Flows	Privatization	Entry Barriers, Activity Restrictions	Banking Supervision	Directed Credit	Interest Rate Controls
Finance relative ICT intensity	1								
Domestic bank credit	0.06	1							
Financial globalization	0.24	0.11	1						
International Capital Flows	-0.15	-0.02	0.02	1					
Privatization	0.04	0.00	-0.09	-0.09	1				
Entry Barriers, Activity Restrictions	-0.08	0.08	0.05	0.12	-0.02	1			
Banking Supervision	-0.06	0.00	-0.08	0.03	0.04	0.11	1		
Directed Credit	-0.12	-0.01	0.09	0.05	-0.05	0.09	0.08	1	
Interest Rate Controls	-0.11	0.03	0.02	0.04	-0.01	-0.03	-0.06	0.10	1

Notes: Statistics are computed for 241 observations. The range for t is 1976-1998. This is due to our choice to use financial regulation variables in 1973-1995. Wage, skill and ICT variables are calculated based on EU KLEMS data. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). Statistics on the financial reform indices are reported in Table 4. Financial reform variables (International Capital Flows, Privatization, Entry Barriers, Activity Restrictions, Banking Supervision, Directed Credit, Interest Rate Controls) are from Abiad, Detragiache and Tressel (2008) and are described in detail Table 4 and in the main text. Only correlation coefficients that are strictly greater than 0.11 are statistically significant at the 5% level; in Panel B most correlation coefficients are not statistically significant at conventional levels.

Table 9: Finance Relative Wage and Relative Skill Intensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent Variable:	Finance relative wage				Finance skilled relative wage				Finance relative skill intensity				Finance excess wage			
Finance relative share of ICT in capital stock, t-3	0.984*			0.204	1.408**			0.990*	0.145***			0.108**	1.130**			0.360
	(0.532)			(0.460)	(0.627)			(0.578)	(0.0372)			(0.0434)	(0.525)			(0.474)
Domestic credit/GDP, t-3	-0.0559			0.0302	0.232**			0.341***	0.0118*			0.0190***	-0.0283			0.0586
	(0.0852)			(0.0678)	(0.104)			(0.0884)	(0.00616)			(0.00664)	(0.0869)			(0.0725)
Financial globalization, t-3	0.462***			0.251***	0.255***			0.0199	0.0481***			0.0472***	0.365***			0.182***
	(0.0554)			(0.0488)	(0.0720)			(0.0637)	(0.00427)			(0.00478)	(0.0603)			(0.0523)
International capital restrictions, t-3		0.134***	0.174***	0.132***		0.105***	0.154***	0.147***		0.0133***	0.00801**	-0.000474		0.146***	0.178***	0.145***
		(0.0220)	(0.0249)	(0.0249)		(0.0263)	(0.0330)	(0.0336)		(0.00322)	(0.00315)	(0.00252)		(0.0219)	(0.0267)	(0.0276)
Privatization, t-3		-0.00777	-0.0587	-0.0478		-0.0146	-0.0483	-0.0638		-0.0156***	-0.0187***	-0.0167***		-0.0213	-0.0557	-0.0478
		(0.0360)	(0.0432)	(0.0416)		(0.0389)	(0.0525)	(0.0514)		(0.00476)	(0.00501)	(0.00386)		(0.0324)	(0.0425)	(0.0422)
Entry barriers, t-3		-0.0286	-0.117***	-0.145***		-0.0630**	-0.0815*	-0.143***		0.00194	0.00649	-0.00105		-0.119***	-0.126***	-0.153***
		(0.0258)	(0.0333)	(0.0327)		(0.0308)	(0.0434)	(0.0432)		(0.00377)	(0.00414)	(0.00325)		(0.0257)	(0.0351)	(0.0355)
Banking supervision, t-3		0.142***	0.196***	0.169***		0.133***	0.171***	0.201***		0.0106***	0.00999***	0.00690**		0.156***	0.185***	0.171***
		(0.0249)	(0.0298)	(0.0298)		(0.0272)	(0.0372)	(0.0377)		(0.00332)	(0.00355)	(0.00284)		(0.0226)	(0.0301)	(0.0310)
Directed credit, t-3		-0.0406*	0.00644	0.0360		0.0279	0.0314	0.0397		-0.00927***	-0.00546	0.000999		-0.0215	-0.00147	0.0234
		(0.0212)	(0.0282)	(0.0272)		(0.0236)	(0.0369)	(0.0362)		(0.00289)	(0.00352)	(0.00272)		(0.0197)	(0.0298)	(0.0297)
Interest rate control, t-3		0.0614***	0.0902***	0.0506**		0.0388*	0.0637**	0.0226		0.00522*	0.00618**	-0.00187		0.0415**	0.0694***	0.0400*
		(0.0192)	(0.0214)	(0.0215)		(0.0228)	(0.0274)	(0.0278)		(0.00279)	(0.00261)	(0.00209)		(0.0190)	(0.0221)	(0.0229)
Sample	Full	Full	1∩2	1∩2	Full	Full	5∩6	5∩6	Full	Full	9∩10	9∩10	Full	Full	13∩14	13∩14
Observations	265	404	241	241	238	324	226	226	238	324	226	226	238	324	226	226
R-squared, within	0.335	0.283	0.480	0.549	0.220	0.233	0.310	0.390	0.730	0.474	0.533	0.744	0.279	0.366	0.434	0.484
Number of countries	13	20	13	13	13	20	13	13	13	20	13	13	13	20	13	13

Note: All regressions include country fixed effects and year fixed effects. The right hand side variables are lagged 3 periods. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). The sample ends in 1998. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 10: Finance Relative Wage and Relative Skill Intensity, Predictive Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent Variable:	Change in finance relative wage, t to t+3				Change in finance skilled relative wage, t to t+3				Change in finance relative skill intensity, t to t+3				Change in finance excess wage, t to t+3			
Finance relative share of ICT in capital stock, t-3 to t	0.530			0.552	0.0769			0.240	0.0190			0.0337	-0.0824			0.150
	(0.543)			(0.484)	(0.500)			(0.517)	(0.0447)			(0.0483)	(0.465)			(0.479)
Domestic credit/GDP, t-3 to t	-0.0788			-0.0751	-0.0849			-0.0919	-0.0134*			-0.0128*	-0.104			-0.0863
	(0.0860)			(0.0724)	(0.0789)			(0.0772)	(0.00705)			(0.00722)	(0.0734)			(0.0715)
Financial globalization, t-3 to t	0.340***			0.137***	0.148***			0.0962*	0.0109**			0.00956*	0.155***			0.109**
	(0.0495)			(0.0508)	(0.0510)			(0.0552)	(0.00456)			(0.00516)	(0.0474)			(0.0511)
International capital restrictions, t-3 to t		0.0810***	0.103***	0.108***		0.0524***	0.0676***	0.0704***		0.00478**	0.000304	0.000760		0.0716***	0.0869***	0.0884***
		(0.0183)	(0.0227)	(0.0230)		(0.0193)	(0.0244)	(0.0250)		(0.00233)	(0.00230)	(0.00234)		(0.0193)	(0.0227)	(0.0232)
Privatization, t-3 to t		0.0168	0.00911	0.0134		0.00495	-0.0170	-0.0118		-0.00160	-0.00458	-0.00403		0.000192	-0.0155	-0.00946
		(0.0217)	(0.0278)	(0.0277)		(0.0224)	(0.0295)	(0.0296)		(0.00271)	(0.00277)	(0.00277)		(0.0224)	(0.0274)	(0.0275)
Entry barriers, t-3 to t		-0.0215	-0.0242	-0.0251		0.00855	0.00903	0.00859		-0.00422*	-0.00583**	-0.00584**		-0.0250	-0.0257	-0.0265
		(0.0186)	(0.0246)	(0.0243)		(0.0195)	(0.0260)	(0.0259)		(0.00236)	(0.00244)	(0.00243)		(0.0195)	(0.0242)	(0.0240)
Banking supervision, t-3 to t		0.0437**	0.0199	0.0206		0.00105	0.00382	0.00390		0.00629***	0.00338	0.00331		0.0109	0.00238	0.00303
		(0.0178)	(0.0218)	(0.0216)		(0.0187)	(0.0233)	(0.0233)		(0.00226)	(0.00219)	(0.00218)		(0.0187)	(0.0216)	(0.0216)
Directed credit, t-3 to t		-0.00359	0.00355	-0.00433		-0.0109	-0.00328	-0.00867		0.00148	0.00251	0.00208		-0.0206	-0.0148	-0.0219
		(0.0181)	(0.0236)	(0.0239)		(0.0186)	(0.0248)	(0.0253)		(0.00224)	(0.00233)	(0.00237)		(0.0186)	(0.0230)	(0.0234)
Interest rate control, t-3 to t		-0.0114	0.0190	0.0172		-0.0221	-0.0133	-0.0156		-8.82e-05	0.00153	0.00134		-0.00802	0.0145	0.0115
		(0.0145)	(0.0171)	(0.0170)		(0.0154)	(0.0181)	(0.0182)		(0.00186)	(0.00171)	(0.00171)		(0.0154)	(0.0169)	(0.0169)
Sample	Full	Full	1∩2	1∩2	Full	Full	5∩6	5∩6	Full	Full	9∩10	9∩10	Full	Full	13∩14	13∩14
Observations	265	404	241	241	238	324	226	226	238	324	226	226	238	324	226	226
R-squared	0.162	0.070	0.096	0.131	0.040	0.032	0.042	0.061	0.038	0.047	0.059	0.087	0.053	0.051	0.078	0.103
Number of countries	13	20	13	13	13	20	13	13	13	20	13	13	13	20	13	13

Note: All regressions include country fixed effects. The right hand side deregulation variables are the three-year changes (from t-3 to t) for each index. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). The sample ends in 2000. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Finance Relative Wage and Relative Skill Intensity, Predictive Regressions, TSLS

Instrumented:	Change in International capital restrictions, t-3 to t				Change in Finance relative share of ICT in capital stock, t-3 to t			
Instrument:	International capital restrictions, t-3				Relative Price of ICT in the Economy, t-3			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable: Changes from t to t+3 in	Relative Wage	Relative Skilled Wage	Relative Skill Intensity	Excess Wage	Relative Wage	Relative Skilled Wage	Relative Skill Intensity	Excess Wage
Change in finance relative share of ICT in capital stock, t-3	0.326	0.480	0.0197	0.398	0.788	-0.768	0.108	-0.755
	(0.531)	(0.557)	(0.0518)	(0.518)	(0.810)	(0.857)	(0.0801)	(0.669)
Change in domestic credit/GDP, t-3 to t	-0.0607	-0.104	-0.0121*	-0.0984	-0.0900*	-0.0881	-0.0144**	-0.0877*
	(0.0744)	(0.0786)	(0.00731)	(0.0730)	(0.0466)	(0.0536)	(0.00650)	(0.0465)
Change in financial globalization, t-3 to t	0.138***	0.0942*	0.00967*	0.107**	0.141*	0.0904	0.0105**	0.106
	(0.0514)	(0.0558)	(0.00518)	(0.0518)	(0.0781)	(0.0830)	(0.00509)	(0.0814)
Change in international capital restrictions, t-3 to t	0.0556	0.122**	-0.00229	0.142***	0.111***	0.0597**	0.00158	0.0789***
	(0.0526)	(0.0494)	(0.00459)	(0.0459)	(0.0305)	(0.0295)	(0.00179)	(0.0267)
Change in privatization, t-3 to t	0.0116	-0.00807	-0.00425	-0.00558	0.0123	-0.00784	-0.00432*	-0.00586
	(0.0281)	(0.0301)	(0.00280)	(0.0280)	(0.0210)	(0.0202)	(0.00251)	(0.0185)
Change in entry barriers, t-3 to t	-0.0211	0.00489	-0.00562**	-0.0304	-0.0243	0.00685	-0.00566***	-0.0279
	(0.0249)	(0.0264)	(0.00245)	(0.0245)	(0.0186)	(0.0231)	(0.00183)	(0.0201)
Change in banking supervision, t-3 to t	0.0232	0.00190	0.00343	0.000951	0.0183	0.00507	0.00302	0.00337
	(0.0220)	(0.0236)	(0.00219)	(0.0219)	(0.0177)	(0.0181)	(0.00217)	(0.0180)
Change in directed credit, t-3 to t	-0.00436	-0.00736	0.00200	-0.0206	-0.00464	-0.0151	0.00237	-0.0284
	(0.0241)	(0.0256)	(0.00238)	(0.0238)	(0.0300)	(0.0275)	(0.00213)	(0.0285)
Change in interest rate control, t-3 to t	0.0180	-0.0162	0.00138	0.0109	0.0161	-0.0198	0.00142	0.00693
	(0.0172)	(0.0184)	(0.00171)	(0.0171)	(0.0169)	(0.0216)	(0.00197)	(0.0179)
Observations	241	226	226	226	237	223	223	223
R-squared	0.294	0.347	0.320	0.335	0.315	0.350	0.326	0.346
First stage partial F-stat	31.97	30.16	30.16	30.16	20.38	20.97	20.97	20.97

Note: All regressions include country fixed effects. The right hand side deregulation variables are the three-year changes (from t-3 to t) for each index. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). The sample ends in 2000. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 12: Financial Reforms, Relative ICT Use in Finance and Financial Globalization

Dependent Variable:	Relative ICT Intensity in Finance			Financial Globalization		
	(1)	(2)	(3)	(4)	(5)	(6)
International capital restrictions, t-3	0.0494***	0.0108**	0.0120**	0.512***	0.195***	0.189***
	(0.00470)	(0.00479)	(0.00491)	(0.0325)	(0.0320)	(0.0314)
Entry barriers, t-3			0.00962			0.0974**
			(0.00657)			(0.0420)
Interest rate controls, t-3			0.00676			0.126***
			(0.00421)			(0.0270)
Privatization, t-3			-0.0119			-0.105*
			(0.00852)			(0.0545)
Banking supervision, t-3			-0.0173***			0.0720*
			(0.00588)			(0.0376)
Directed credit, t-3			0.000885			-0.110***
			(0.00556)			(0.0356)
Observations	241	241	241	241	241	241
R-squared, within	0.327	0.662	0.686	0.522	0.775	0.809
Number of countries	13	13	13	13	13	13
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	No	Yes	Yes

Note: All regressions include country fixed effects; columns 2, 3, 5 and 6 include also year fixed effects. Deregulation data are from Abiad, Detragiache and Tressel (2008). Relative ICT use in finance is calculated from EU KLEMS database. The sample is restricted to be the same as the sample of the level regressions in Table 6. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 13: Immigration to Finance

A. Skilled workers

	Employed in finance by destination					Employed in finance by source			
	Number	Skill intensity (share in total) (%)	Share in total finance skilled immigration (%)	Share in finance skilled employment in destination (%)	Share in total skilled immigration to destination (%)	Number	Skill intensity (share in total) (%)	Share in total finance skilled immigration (%)	Share in total skilled immigration from source (%)
Australia	10458	38.1	8.22	10.97	0.33	6697	62.6	5.27	0.37
Austria	347	33.7	0.27	2.74	0.21	1744	51.3	1.37	0.09
Canada	19450	51.0	15.29	10.61	0.38	17580	59.0	13.82	1.07
Denmark	221	33.2	0.17	3.07	0.13	1710	54.9	1.34	0.09
Spain	2060	58.5	1.62	1.55	0.27	5195	24.2	4.08	0.26
Finland	132	49.6	0.10	0.57	0.19	1628	47.3	1.28	0.08
France	9429	11.9	7.41	6.59	0.62	12929	67.4	10.17	0.68
Hungaria	58	67.4	0.05	0.27	0.20	1790	51.4	1.41	0.09
Ireland	4145	62.3	3.26	19.03	0.44	8354	45.9	6.57	0.43
Italy	1343	35.8	1.06	1.69	0.26	12154	31.2	9.56	0.61
Luxemburg	2261	49.3	1.78	29.44	1.83	232	32.4	0.18	0.01
Portugal	568	47.0	0.45	2.55	0.22	5525	11.0	4.34	0.28
Sweden	775	32.9	0.61	3.04	0.14	2735	64.7	2.15	0.14
United Kingdom	24131	62.5	18.97	10.55	0.65	37454	49.0	29.45	2.14
United States	51804	56.2	40.73	1.98	0.47	11455	71.1	9.01	0.93
Total	127182	42.5	100			127182	42.5	100	

Correl(Share in finance employment , share in total immigration flows) 0.84

B. All workers

	Employed in finance by destination				Employed in finance by source		
	Number	Share in total finance immigration (%)	Share in finance employment in destination (%)	Share in total immigration to destination (%)	Number	Share in total finance immigration (%)	Share in total immigration from source (%)
Australia	27450	9.17	8.55	0.26	10692	3.57	0.23
Austria	1030	0.34	0.91	0.18	3399	1.13	0.06
Canada	38130	12.73	6.32	0.32	29785	9.94	0.65
Denmark	666	0.22	0.84	0.14	3112	1.04	0.06
Spain	3520	1.18	1.08	0.15	21483	7.17	0.41
Finland	266	0.09	0.65	0.10	3440	1.15	0.06
France	79074	26.40	11.33	0.81	19177	6.40	0.40
Hungaria	86	0.03	0.12	0.15	3481	1.16	0.06
Ireland	6649	2.22	10.07	0.32	18194	6.07	0.34
Italy	3752	1.25	0.72	0.18	38993	13.02	0.74
Luxemburg	4589	1.53	15.30	0.64	715	0.24	0.01
Portugal	1209	0.40	1.51	0.12	50271	16.78	0.94
Sweden	2355	0.79	2.51	0.12	4230	1.41	0.08
United Kingdom	38626	12.90	3.92	0.45	76431	25.52	1.58
United States	92107	30.75	1.54	0.38	16106	5.38	0.43
Total	299509	100			299509	100	

Correl(Share in finance employment , share in total immigration flows) 0.79

Notes: Data are immigration stocks of workers that are employed in financial intermediation in the destination country, regardless of their past employment sector or employment status in the source country. Panel A reports statistics for skilled workers, which are consistently defined as having a college or university Bachelors' degree. In this panel all statistics, except for the skill intensity, are relative to skilled workers. Panel B reports statistics for all types of workers. The first set of columns in each panel report the distribution of immigrants in their destination countries (where they moved to), while the latter set of columns report the distribution of those immigrants by source country (where they came from). Data source: OECD.

Table 14: Summary Statistics

	Mean	S.D.	Min	Median	Max
A. Migration flows					
Log(mH_fin)	4.15	2.32	0.0	4.09	9.62
(mH_fin/mH)*100	6.47	6.99	0.75	4.30	46.26
mH_fin/mL_fin	1.46	1.24	0.05	1.06	6.50
Log(mL_fin)	4.12	2.32	0.0	4.01	10.53
mL_fin/mL	5.05	7.26	0.26	2.58	43.33
B. Wages					
Log(wH_fin)	4.39	0.23	3.97	4.41	4.84
Log(wH_nonfin)	4.06	0.19	3.53	4.10	4.32
wH_fin/wL_fin	1.62	0.35	1.07	1.62	2.55
wH_nonfin/wL_nonfin	1.88	0.53	1.29	1.84	3.66
Log(wL_fin)	3.95	0.29	3.03	3.97	4.36
Log(wL_nonfin)	3.47	0.25	2.59	3.54	3.71
C. Gravity controls					
Contiguous countries	0.09	0.29	0.0	0.0	1.0
Common language	0.16	0.36	0.0	0.0	1.0
Log(distance)	7.84	1.11	5.37	7.53	9.8

Notes: 193 observations. m denotes imgration stocks in 2000, n denotes employment in 2000, and w denotes wages in 1999. H denotes high-skill and L denotes low-skill workers, where high-skill is consistently defined as four-year college or university degree. "fin" denotes employment in finance and "nonfin" denotes employment outside of finance and agriculture.

Table 15: Immigration Stocks Employed in Finance and Wages in Finance

	(1)	(2)	(3)	(4)	(5)	(6)
A. Skilled immigration						
Dependent variable:	log(mH_fin)		(mH_fin/mH)*100		mH_fin/mL_fin	
Log(wH_fin)	3.783***	2.335***	16.52***	13.91***		
	(0.570)	(0.789)	(3.005)	(3.023)		
Log(wH_nonfin)		2.735***		4.912**		
		(0.789)		(1.912)		
wH_fin/wL_fin					0.968***	0.983***
					(0.298)	(0.302)
wH_nonfin/wL_nonfin						0.487***
						(0.141)
Observations	193	193	193	193	183	183
R-squared	0.511	0.540	0.359	0.369	0.232	0.272
B. Unskilled immigration						
Dependent variable:	log(mL_fin)		(mL_fin/mL)*100			
Log(wL_fin)	2.562***	0.374	6.442***	3.411		
	(0.398)	(0.592)	(2.247)	(2.322)		
Log(wL_nonfin)		3.712***		5.141**		
		(0.702)		(2.032)		
Observations	193	193	193	193		
R-squared	0.444	0.518	0.149	0.163		

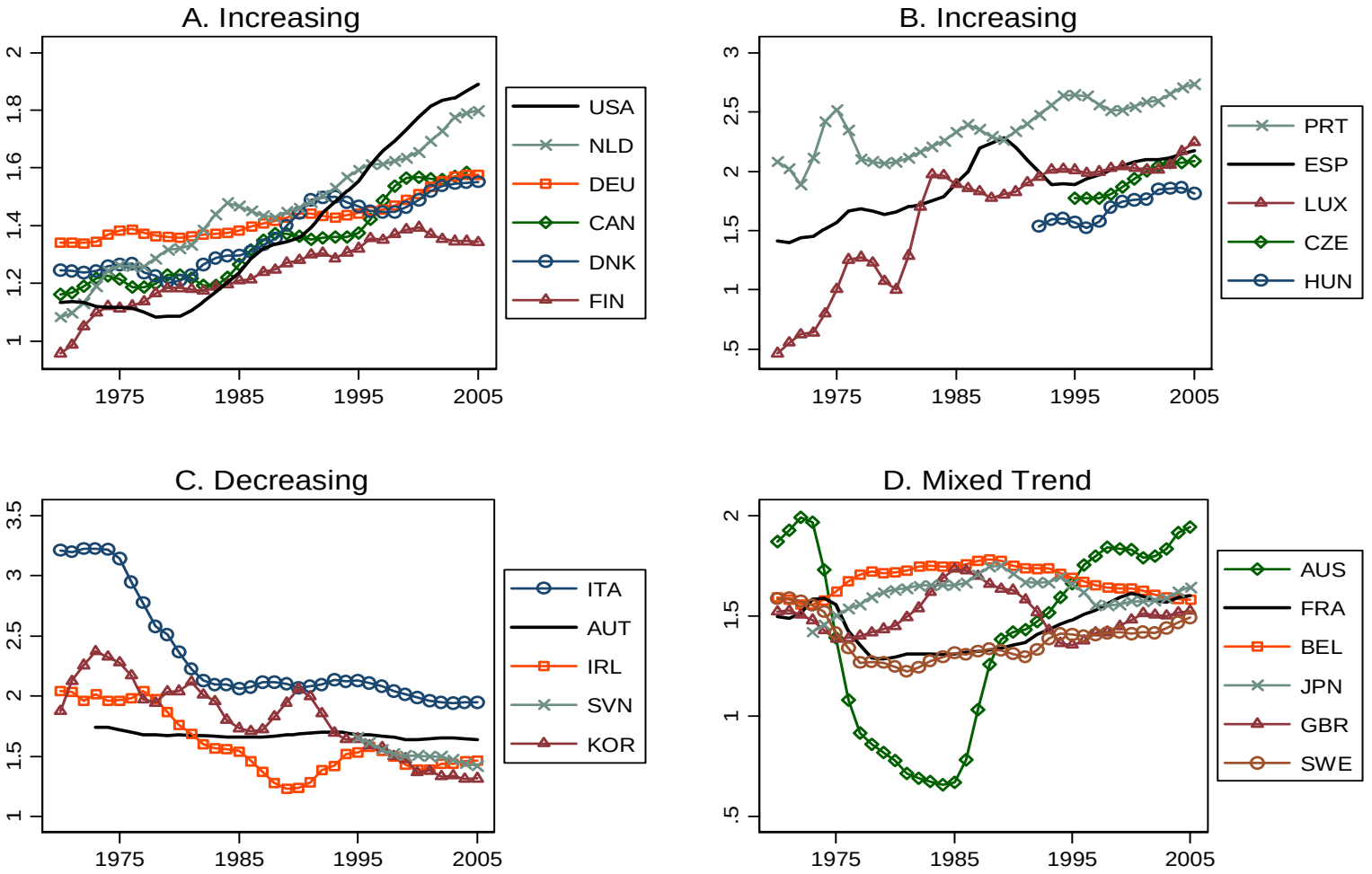
Notes: m denotes imgration stocks in 2000, and w denotes wages in 1999. H denotes high-skill and L denotes low-skill workers, where high-skill is consistently defined as four-year college or university degree. "fin" denotes employment in finance and "nonfin" denotes emploiyment outside of finance and agriculture. All regressions include source country fixed effects and the following gravity variables: contiguity indicator, commonlanguage indicator, and log distance between capital cities. Although regressions in both panels have the same number of observations, the sample varies slightly due to data availability. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Data sources: migration data from OECD and wage data from EU KLEMS. Distance between capital cities, common language and contiguity indicators are from the CEPII dataset.

Table 16: Immigration Stocks and Wages in Other Sectors -- Skilled Immigrants

	(1)	(2)	(3)	(4)	(5)	(6)
A. Skilled immigration in Health Services						
Dependent variable:	log(mH_health)		(mH_health/mH)*100		mH_health/mL_health	
Log(wH_health)	2.050***	1.862***	-2.405	-6.377***		
	(0.511)	(0.704)	(1.893)	(2.130)		
Log(wH_nonhealth)		0.327		6.912*		
		(1.198)		(3.748)		
wH_health/wL_health					0.817***	0.778***
					(0.209)	(0.197)
wH_nonhealth/wL_nonhealth						0.0462
						(0.282)
Observations	203	203	203	203	195	195
R-squared	0.430	0.430	0.187	0.202	0.304	0.304
B. Skilled immigration in Manufacturing						
Dependent variable:	log(mH_manuf)		(mH_manuf/mH)*100		mH_manuf/mL_manuf	
Log(wH_manuf)	2.221***	3.240***	-9.230***	-5.274***		
	(0.542)	(0.718)	(1.835)	(2.023)		
Log(wH_nonmanuf)		-1.597*		-6.205**		
		(0.823)		(2.719)		
wH_manuf/wL_manuf					0.172*	0.294
					(0.103)	(0.364)
wH_nonmanuf/wL_nonmanuf						-0.131
						(0.337)
Observations	188	188	188	188	187	187
R-squared	0.457	0.469	0.248	0.271	0.269	0.270
C. Skilled immigration in Real Estate and Business Services						
Dependent variable:	log(mH_rebus)		(mH_rebus/mH)*100		mH_rebus/mL_rebus	
Log(wH_rebus)	0.647	0.463	-2.430	-0.987		
	(0.492)	(0.481)	(2.810)	(2.655)		
Log(wH_nonrebus)		1.411***		-11.09***		
		(0.526)		(2.228)		
wH_rebus/wL_rebus					0.339*	0.274
					(0.174)	(0.323)
wH_nonrebus/wL_nonrebus						0.0707
						(0.291)
Observations	191	191	191	191	189	189
R-squared	0.420	0.447	0.148	0.261	0.176	0.176

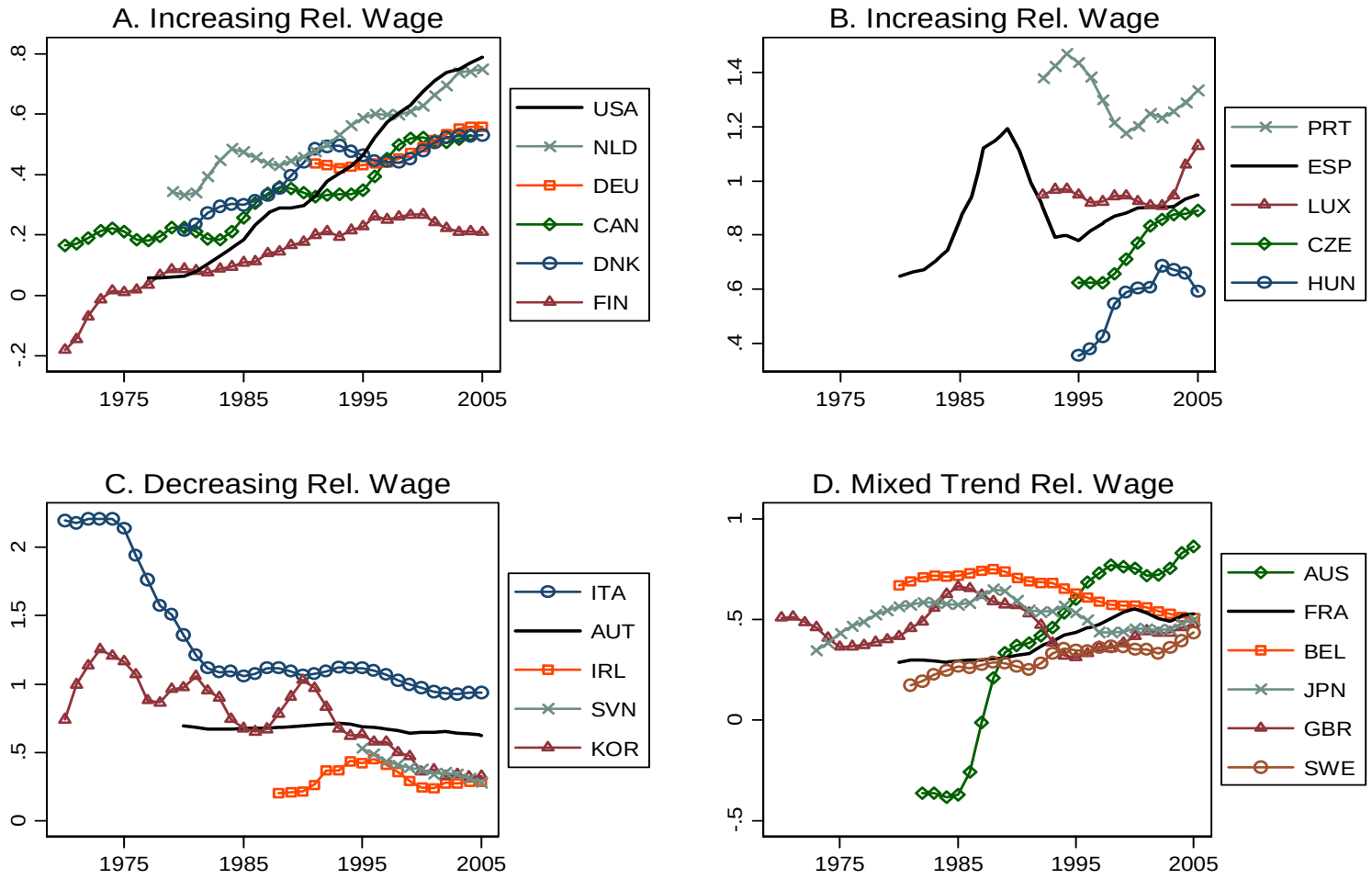
Notes: m denotes imgration stocks in 2000, and w denotes wages in 1999. H denotes high-skill and L denotes low-skill workers, where high-skill is consistently defined as four-year college or university degree. "health" denotes employment in health and social works and "nonhealth" denotes employment outside of health and social works and agriculture. "manuf" denotes employment in manufacturing and "nonmanuf" denotes employment outside of manufacturing and agriculture. "rebus" denotes employment in real estate, renting and business activities and "nonrebus" denotes employment outside of real estate, renting and business activities and agriculture. All regressions include source country fixed effects and the following gravity variables: contiguity indicator, commonlanguage indicator, and log distance between capital cities. Samples vary slightly due to data availability. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Data sources: migration data from OECD and wage data from EU KLEMS. Distance between capital cities, common language and contiguity indicators are from the CEPII dataset.

Figure 1: Finance Relative Wage



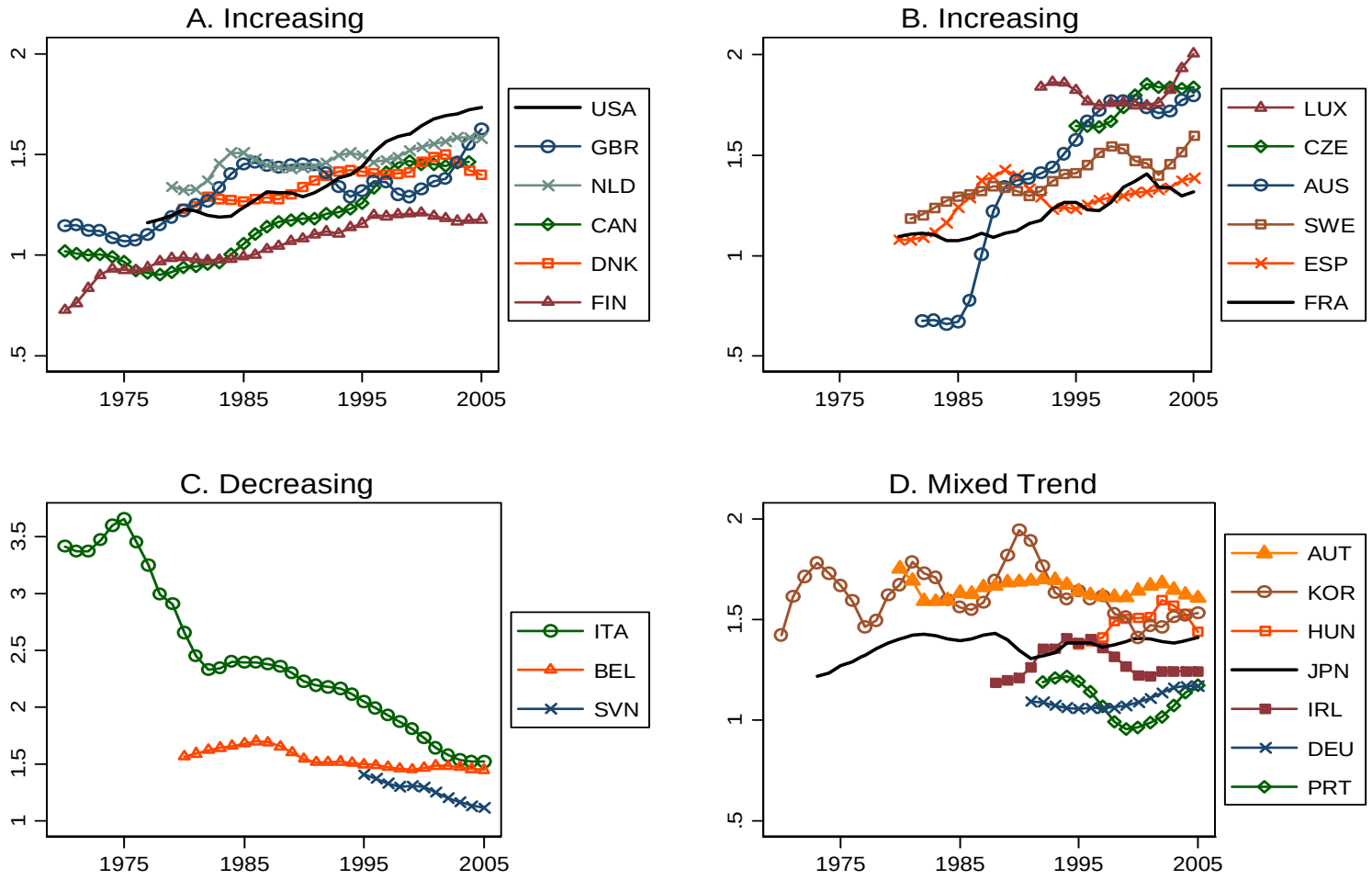
Notes: Finance relative wage is the average wage in finance relative to the averagre wage in the the non-farm, non-finance private sector. Average wages are computed by dividing employee compensation by hours worked. Data: EU KLEMS. Series are three-year moving averages. Panels A and B groups countries that exhibit an increasing trend. Panel C groups countries that exhibit decreasing trend and Panel D groups countries that exhibit mixed trends.

Figure 2: Finance Excess Wage



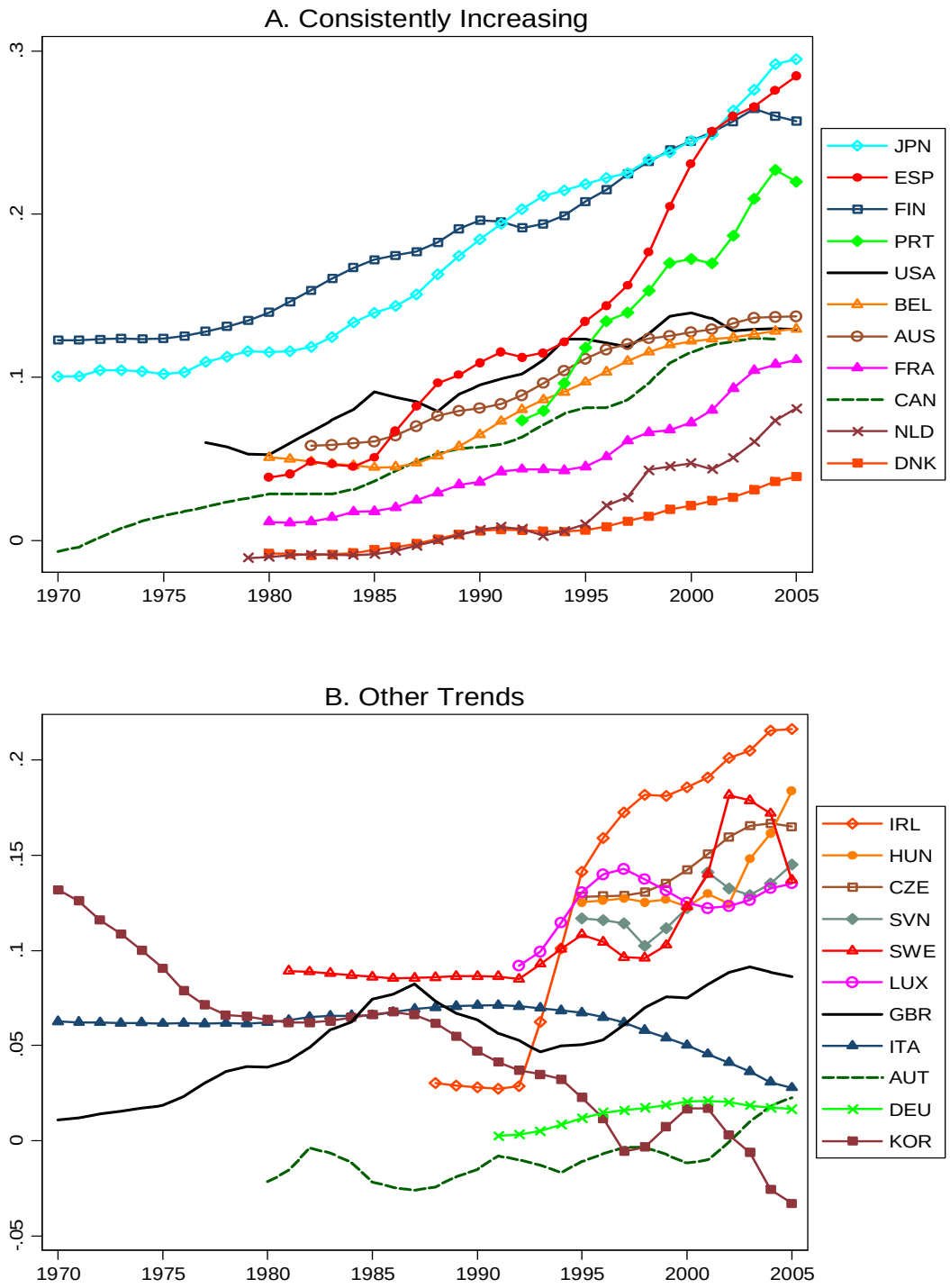
Notes: Finance ecess wage is the finance relative wage minus the benchmark wage. The benchmark assumes equal skilled and unskilled wages in finance and in the non-farm, non-finance private sector (NFFP), and allows for skill differences in finance versus NFFP. Data: EU KLEMS. Series are three-year moving averages. Panels A and B groups countries that exhibit an increasing trend in the finance relative wage. Panel C groups countries that exhibit decreasing finance relative wage and Panel D groups countries that exhibit mixed trends in finance relative wages.

Figure 3: Finance Relative Skilled Wage



Notes: Finance relative skilled wage is the average wage of skilled workers in finance relative to the averagre wage of skilled workers in the rest of the non-farm, non-finance private sector. Average wages are computed by dividing employee compensation by hours worked. Data: EU KLEMS. The definition of skilled workers in the EU KLEMS is consistent across countries, and implies a university-equivalent bachelors degree. Series are three-year moving averages. Panels A and B groups countries that exhibit an increasing trend. Panel C groups countries that exhibit decreasing trend and Panel D groups countries that exhibit mixed trends.

Figure 4: Finance Relative Skill Intensity



Notes: Finance relative skill intensity is the share of college-educated workers in finance relative to the share of college-educated workers in the rest of the non-farm, non-finance private sector. These shares are computed using hours worked. Data: EU KLEMS. The definition of skilled workers in the EU KLEMS is consistent across countries, and implies a university-equivalent bachelors degree. Series are three-year moving averages. Panel A groups countries that exhibit an increasing trend. Panel B groups countries that exhibit mixed trends.

APPENDIX TABLES

Table A1: Finance Relative Wage and Relative Skill Intensity, Nonlinear Effects of Financial Reform

Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Finance relative wage				Finance skilled relative wage				Finance relative skill intensity				Finance excess wage			
													(5)	(6)	(7)	(8)
Finance relative share of IT in capital stock, t-3	0.984*			0.0237	1.408**			0.166	0.145***			0.0681	1.130**			0.00878
	(0.532)			(0.507)	(0.627)			(0.635)	(0.0372)			(0.0467)	(0.525)			(0.524)
Domestic credit/GDP, t-3	-0.0559			-0.0510	0.232**			0.194**	0.0118*			0.0144**	-0.0283			-0.0175
	(0.0852)			(0.0661)	(0.104)			(0.0861)	(0.00616)			(0.00633)	(0.0869)			(0.0709)
Financial globalization, t-3	0.462***			0.255***	0.255***			0.0467	0.0481***			0.0468***	0.365***			0.188***
	(0.0554)			(0.0451)	(0.0720)			(0.0592)	(0.00427)			(0.00435)	(0.0603)			(0.0488)
International capital restrictions == 1, t-3		0.223***	0.334***	0.283***		0.271***	0.333***	0.333***		0.0149**	0.0215***	0.0114**		0.320***	0.374***	0.337***
		(0.0405)	(0.0481)	(0.0472)		(0.0569)	(0.0686)	(0.0725)		(0.00704)	(0.00686)	(0.00533)		(0.0480)	(0.0578)	(0.0597)
International capital restrictions == 2, t-3		0.328***	0.460***	0.368***		0.334***	0.461***	0.446***		0.0240***	0.0238***	0.00491		0.414***	0.500***	0.429***
		(0.0458)	(0.0505)	(0.0505)		(0.0604)	(0.0701)	(0.0752)		(0.00748)	(0.00700)	(0.00553)		(0.0509)	(0.0590)	(0.0620)
Privatization == 1, t-3		0.0411	0.0176	0.0358		-0.0645	-0.181**	-0.174**		-0.000142	-0.000867	0.00455		0.0210	0.00148	0.0168
		(0.0461)	(0.0680)	(0.0646)		(0.0496)	(0.0795)	(0.0803)		(0.00614)	(0.00794)	(0.00590)		(0.0418)	(0.0669)	(0.0662)
Privatization == 2, t-3		-0.00660	0.0275	0.0498		0.0487	-0.0316	-0.0523		-0.0321***	-0.0215**	-0.0186**		0.00979	0.0313	0.0461
		(0.0715)	(0.0846)	(0.0814)		(0.0733)	(0.0988)	(0.101)		(0.00908)	(0.00987)	(0.00741)		(0.0618)	(0.0832)	(0.0831)
Entry barriers == 1, t-3		-0.0118	0.000694	-0.0279		0.0119	0.0251	-0.0251		0.0120**	0.0214***	0.0107**		-0.0350	-0.00480	-0.0342
		(0.0352)	(0.0415)	(0.0417)		(0.0447)	(0.0530)	(0.0564)		(0.00554)	(0.00529)	(0.00415)		(0.0377)	(0.0446)	(0.0465)
Entry barriers == 2, t-3		-0.0538	-0.201***	-0.222***		-0.0718	-0.134	-0.219**		0.0132*	0.0219***	0.00872		-0.178***	-0.219***	-0.242***
		(0.0514)	(0.0642)	(0.0634)		(0.0604)	(0.0821)	(0.0870)		(0.00747)	(0.00820)	(0.00640)		(0.0509)	(0.0691)	(0.0717)
Banking supervision == 1, t-3		0.119***	0.157***	0.127***		0.122***	0.141***	0.156***		0.00755*	0.00563	0.00320		0.140***	0.160***	0.138***
		(0.0295)	(0.0356)	(0.0363)		(0.0318)	(0.0439)	(0.0469)		(0.00394)	(0.00438)	(0.00345)		(0.0268)	(0.0369)	(0.0387)
Banking supervision == 2, t-3		0.378***	0.470***	0.396***		0.298***	0.345***	0.364***		0.0287***	0.0235***	0.0165***		0.372***	0.429***	0.383***
		(0.0536)	(0.0587)	(0.0594)		(0.0548)	(0.0703)	(0.0746)		(0.00678)	(0.00703)	(0.00548)		(0.0462)	(0.0592)	(0.0615)
Directed credit == 1, t-3		-0.0542	-0.195***	-0.179***		-0.132***	-0.283***	-0.234***		-0.0314***	-0.0307***	-0.0194***		-0.133***	-0.207***	-0.178***
		(0.0345)	(0.0484)	(0.0475)		(0.0398)	(0.0589)	(0.0605)		(0.00492)	(0.00589)	(0.00444)		(0.0335)	(0.0496)	(0.0498)
Directed credit == 2, t-3		-0.0881**	-0.134**	-0.0782		0.0193	-0.115	-0.0776		-0.0275***	-0.0253***	-0.00978*		-0.0836**	-0.145**	-0.0911
		(0.0415)	(0.0577)	(0.0553)		(0.0451)	(0.0719)	(0.0728)		(0.00558)	(0.00718)	(0.00535)		(0.0380)	(0.0605)	(0.0600)
Interest rate control == 1, t-3		0.162***	0.125***	0.106***		0.116***	0.133***	0.106**		-0.00829	-0.00158	-0.00520		0.0875**	0.110***	0.103**
		(0.0331)	(0.0375)	(0.0363)		(0.0425)	(0.0477)	(0.0492)		(0.00526)	(0.00476)	(0.00362)		(0.0359)	(0.0401)	(0.0406)
Interest rate control == 2, t-3		0.162***	0.178***	0.115***		0.109**	0.113**	0.0656		0.00300	0.00767	-0.00501		0.109***	0.141***	0.103**
		(0.0380)	(0.0405)	(0.0401)		(0.0458)	(0.0509)	(0.0531)		(0.00566)	(0.00508)	(0.00391)		(0.0386)	(0.0428)	(0.0438)
Sample	Full	Full	1∩2	1∩2	Full	Full	5∩6	5∩6	Full	Full	9∩10	9∩10	Full	Full	13∩14	13∩14
Observations	265	404	241	241	238	324	226	226	238	324	226	226	238	324	226	226
R-squared, within	0.335	0.350	0.582	0.643	0.220	0.363	0.493	0.517	0.730	0.552	0.624	0.806	0.279	0.461	0.549	0.588
Number of country_id	13	20	13	13	13	20	13	13	13	20	13	13	13	20	13	13

Note: All regressions include country fixed effects and year fixed effects. The right hand side variables are lagged 3 periods. The right hand side deregulation dummies are constructed as follows: We create a dummy variable corresponding with each value for each index. We drop the category 0 for each deregulation variable. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Financial globalization is sum of foreign assets and liabilities as percentage of GDP (in log) and is taken from Lane and Milesi-Ferretti (2007). Domestic credit data are from Schularick and M. (2012). The sample ends in 1998. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A2: Finance Relative Wage and Relative Skill Intensity, Predictive Regressions, Nonlinear Effects of Financial Reform

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent Variable:	Change in finance relative wage, t to t+3				Change in finance skilled relative wage t to t+3				Change in finance relative skill intensity, t to t+3				Change in finance excess wage, t to t+3			
Change in finance relative share of IT in capital stock, t-3 to t	0.530			0.527	0.0769			0.241	0.0190			0.0134	-0.0824			0.163
	(0.373)			(0.400)	(0.339)			(0.411)	(0.0395)			(0.0412)	(0.346)			(0.392)
Change in domestic credit/GDP, t-3 to t	-0.0788			-0.0566	-0.0849			-0.0722	-0.0134**			-0.0137**	-0.104*			-0.0676
	(0.0612)			(0.0471)	(0.0643)			(0.0540)	(0.00671)			(0.00657)	(0.0558)			(0.0480)
Change in financial globalization, t-3 to t	0.340***			0.141*	0.148*			0.106	0.0109**			0.00723	0.155**			0.121
	(0.0973)			(0.0804)	(0.0756)			(0.0853)	(0.00439)			(0.00534)	(0.0755)			(0.0829)
Change in international capital restrictions == 1, t-3 to t		0.0576***	0.0673**	0.0764**		0.0299	0.0419	0.0469		0.00544*	-0.000996	-0.000490		0.0491**	0.0596**	0.0633**
		(0.0199)	(0.0283)	(0.0305)		(0.0207)	(0.0288)	(0.0320)		(0.00280)	(0.00213)	(0.00212)		(0.0195)	(0.0264)	(0.0288)
Change in international capital restrictions == 2, t-3 to t		0.503***	0.488***	0.472***		0.355**	0.357**	0.346*		0.00612**	0.00301	0.00196		0.394**	0.390**	0.377**
		(0.165)	(0.161)	(0.156)		(0.168)	(0.180)	(0.178)		(0.00294)	(0.00311)	(0.00335)		(0.154)	(0.159)	(0.155)
Change in privatization == -1, t-3 to t		-0.0611**	-0.0578	-0.121		-0.0748*	-0.0819	-0.122		0.00685	0.0455***	0.0434***		-0.0621**	-0.0723	-0.116
		(0.0281)	(0.0764)	(0.0893)		(0.0382)	(0.0765)	(0.0944)		(0.00877)	(0.00606)	(0.00737)		(0.0261)	(0.0759)	(0.0874)
Change in privatization == 1, t-3 to t		0.00748	-0.0255	-0.0207		-0.00140	-0.0437*	-0.0377		-0.00162	-0.00501	-0.00418		0.00618	-0.0233	-0.0163
		(0.0213)	(0.0250)	(0.0240)		(0.0203)	(0.0262)	(0.0264)		(0.00288)	(0.00376)	(0.00373)		(0.0186)	(0.0247)	(0.0243)
Change in privatization == 2, t-3 to t		0.115**	0.132**	0.127**		0.0437	0.0556	0.0570		0.00124	0.00131	0.00151		0.0102	0.0225	0.0251
		(0.0571)	(0.0626)	(0.0625)		(0.0722)	(0.0738)	(0.0720)		(0.00269)	(0.00350)	(0.00367)		(0.0699)	(0.0730)	(0.0710)
Change in entry barriers == 1, t-3 to t		-0.0182	-0.0272	-0.0284		0.00663	0.00741	0.00656		-0.00402**	-0.00521***	-0.00524***		-0.0264	-0.0302	-0.0315
		(0.0211)	(0.0192)	(0.0190)		(0.0223)	(0.0236)	(0.0240)		(0.00184)	(0.00187)	(0.00184)		(0.0231)	(0.0209)	(0.0207)
Change in banking supervision == 1, t-3 to t		0.0493***	0.0225	0.0243		0.00568	0.00741	0.00838		0.00656**	0.00288	0.00277		0.0178	0.00570	0.00725
		(0.0160)	(0.0179)	(0.0181)		(0.0158)	(0.0185)	(0.0193)		(0.00257)	(0.00217)	(0.00219)		(0.0166)	(0.0192)	(0.0194)
Change in directed credit == -1, t-3 to t		0.0795	0.0801	0.0909*		0.0672	0.0727	0.0820		0.00430**	0.00270	0.00359*		0.0620	0.0656	0.0759
		(0.0529)	(0.0580)	(0.0529)		(0.0792)	(0.0833)	(0.0806)		(0.00191)	(0.00183)	(0.00186)		(0.0573)	(0.0607)	(0.0572)
Change in directed credit == 1, t-3 to t		0.0172	0.0404	0.0330		0.00568	0.0293	0.0237		0.00135	0.00309	0.00282		-0.00329	0.0187	0.0113
		(0.0216)	(0.0330)	(0.0300)		(0.0245)	(0.0359)	(0.0337)		(0.00232)	(0.00252)	(0.00266)		(0.0233)	(0.0340)	(0.0314)
Change in directed credit == 2, t-3 to t		-0.118	-0.374***	-0.420***		-0.114	-0.326***	-0.357***		0.0111***	0.0211***	0.0199***		-0.144	-0.397***	-0.434***
		(0.122)	(0.0735)	(0.0729)		(0.111)	(0.0686)	(0.0716)		(0.00390)	(0.00463)	(0.00610)		(0.124)	(0.0742)	(0.0730)
Change in interest rate control == -1, t-3 to t		0.0805	-0.0704	-0.0587		-0.00700	-0.0728	-0.0653		0.00871	0.00296	0.00359		0.0527	-0.0823	-0.0750
		(0.0938)	(0.0737)	(0.0645)		(0.0828)	(0.0854)	(0.0757)		(0.00546)	(0.00478)	(0.00496)		(0.107)	(0.0747)	(0.0672)
Change in interest rate control == 1, t-3 to t		-0.0182	0.0121	0.0127		-0.0182	-0.0223	-0.0228		0.000270	0.00363	0.00371		-0.00340	0.00435	0.00324
		(0.0253)	(0.0372)	(0.0344)		(0.0295)	(0.0414)	(0.0396)		(0.00242)	(0.00300)	(0.00292)		(0.0306)	(0.0407)	(0.0385)
Change in interest rate control == 2, t-3 to t		0.0307	0.00409	-0.00237		-0.0721	-0.0710	-0.0786		0.00452	0.00395	0.00326		-0.000148	-0.00822	-0.0181
		(0.0292)	(0.0301)	(0.0282)		(0.0464)	(0.0503)	(0.0486)		(0.00640)	(0.00626)	(0.00655)		(0.0283)	(0.0311)	(0.0291)
Sample	Full	Full	1∩2	1∩2	Full	Full	5∩6	5∩6	Full	Full	9∩10	9∩10	Full	Full	13∩14	13∩14
Observations	265	404	241	241	238	324	226	226	238	324	226	226	238	324	226	226
R-squared	0.268	0.262	0.364	0.390	0.348	0.334	0.397	0.411	0.284	0.399	0.349	0.365	0.335	0.297	0.393	0.412
Number of countries	13	20	13	13	13	20	13	13	13	20	13	13	13	20	13	13

Note: All regressions include country fixed effects. The right hand side deregulation dummies are connstructed as follows: we calculate three-year changes (from t-3 to t) for each index. Then we create a dummy variable corresponding with each value for each index. We drop the category 0, which corresponds to no change in three-year for each index. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Financial globalization is sum of foreign assets and liabilities as percentage of GDP (in log) and is taken from Lane and Milesi-Ferretti (2007). Domestic credit data are from Schularick and M. (2012). The sample ends in 2000. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Financial Reforms and Relative ICT Use in Finance

Dependent Variable:	Relative ICT Intensity in Finance			Financial Globalization		
	(1)	(2)	(3)	(4)	(5)	(6)
International capital restrictions == 1, t-3	0.0381***	0.0293***	0.0229***	0.356***	0.195***	0.247***
	(0.0124)	(0.00950)	(0.00843)	(0.0848)	(0.0643)	(0.0623)
International capital restrictions == 2, t-3	0.0929***	0.0289***	0.0298***	0.942***	0.390***	0.428***
	(0.0111)	(0.0100)	(0.00885)	(0.0762)	(0.0679)	(0.0654)
Entry barriers == 1, t-3			-0.0114			0.223***
			(0.00727)			(0.0537)
Entry barriers == 2, t-3			0.0190*			0.145*
			(0.0112)			(0.0830)
Interest rate control == 1, t-3			-0.00928			-0.0407
			(0.00656)			(0.0485)
Interest rate control == 2, t-3			0.00516			0.207***
			(0.00709)			(0.0524)
Privatization == 1, t-3			-0.0456***			-0.0893
			(0.0119)			(0.0880)
Privatization == 2, t-3			-0.0461***			-0.138
			(0.0148)			(0.109)
Banking supervision == 1, t-3			-0.0253***			0.0442
			(0.00624)			(0.0461)
Banking supervision == 2, t-3			-0.0449***			0.167**
			(0.0103)			(0.0759)
Directed credit == 1, t-3			-0.0173**			-0.0982
			(0.00847)			(0.0626)
Directed credit == 2, t-3			-0.00147			-0.254***
			(0.0101)			(0.0746)
Observations	241	241	241	241	241	241
R-squared, within	0.330	0.670	0.801	0.530	0.775	0.839
Number of countries	13	13	13	13	13	13
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	Yes	No	Yes	Yes

Notes: Notes: This table investigates wehther deregulation determines relative ICT investment in finance.. Panel A uses linear deregulation variables, whereas in Panel B we use a dummy variable for each value of each index. We drop dummies corresponding to the values of 0. Deregulation data are from Abiad, Detragiache and Tressel (2008). Relative ICT use in finance is calculated from EU KLEMS database. The sample is restricted to be the same as the sample of the level regressions in Table 6.

Table A4: Finance Relative Wage and Relative Skill Intensity, Predictive Regressions, TSLS --- First Stage Regressions

Instrumented, Dependent Variable: Change in International capital restrictions, t-3 to t Instrument: International capital restrictions, t-3			Instrumented, Dependent Variable: Change in Finance relative share of ICT in capital stock, t-3 to t Instrument: Relative Price of ICT in the Economy, t-3		
	(1)	(2)		(3)	(4)
Second Stage Dependent Variable: Changes from t to t+3 in	Relative Wage	Relative Skilled Wage, Relative Skill Intensity, Excess Wage	Second Stage Dependent Variable: Changes from t to t+3 in	Relative Wage	Relative Skilled Wage, Relative Skill Intensity, Excess Wage
International capital restrictions, t-3	-0.371***	-0.473***	Relative Price of ICT in the Economy, t-3	-0.00755***	-0.0151***
	(0.0656)	(0.0862)		(0.00167)	(0.00330)
Change in finance relative share of ICT in capital stock, t-3 to t	1.365	2.159*	Change in domestic credit/GDP, t-3 to t	0.00499	0.00228
	(1.191)	(1.306)		(0.0134)	(0.0133)
Change in domestic credit/GDP, t-3 to t	0.191	0.129	Change in financial globalization, t-3 to t	-0.00611	-0.00806
	(0.146)	(0.151)		(0.00639)	(0.00658)
Change in financial globalization, t-3 to t	0.175	0.189	Change in International capital restrictions, t-3 to t	-0.00981***	-0.0101***
	(0.137)	(0.130)		(0.00269)	(0.00271)
Change in privatization, t-3 to t	0.116	0.0806	Change in privatization, t-3 to t	0.00287	0.000370
	(0.0814)	(0.0861)		(0.00281)	(0.00287)
Change in entry barriers, t-3 to t	0.0729	0.0556	Change in entry barriers, t-3 to t	-0.00267	-0.00312
	(0.0710)	(0.0659)		(0.00288)	(0.00286)
Change in banking supervision, t-3 to t	0.134**	0.128**	Change in banking supervision, t-3 to t	0.000207	-0.000950
	(0.0615)	(0.0600)		(0.00242)	(0.00253)
Change in directed credit, t-3 to t	0.0270	-0.0167	Change in directed credit, t-3 to t	-0.00519**	-0.00553**
	(0.0666)	(0.0623)		(0.00217)	(0.00228)
Change in interest rate control, t-3 to t	0.0297	0.0235	Change in interest rate control, t-3 to t	-0.00197	-0.00168
	(0.0401)	(0.0400)		(0.00157)	(0.00160)
Observations	241	226	Observations	237	223
R-squared	0.284	0.357	R-squared	0.446	0.476

Note: All regressions include country fixed effects. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). The sample ends in 2000. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Missing Observations on Finance Immigrants

A. Skilled Immigrants

	Origin									
Destination	AUS	AUT	DNK	FIN	HUN	IRL	ITA	LUX	PRT	Total
AUS	0	0	0	0	0	0	0	1	0	1
DNK	0	0	0	0	0	0	0	1	0	1
ESP	1	0	0	1	1	0	0	1	0	4
FIN	0	0	0	0	1	0	1	1	1	4
HUN	0	0	1	1	0	1	0	1	1	5
PRT	0	1	0	0	1	0	0	0	0	2
Total	1	1	1	2	3	1	1	5	2	17

A. Unskilled Immigrants

	Origin									
Destination	AUS	AUT	DNK	ESP	FIN	HUN	IRL	LUX	SWE	Total
AUS	0	0	0	0	0	0	0	1	0	1
CAN	0	0	0	0	0	0	0	1	0	1
ESP	0	1	0	0	0	1	0	0	0	2
FIN	0	0	0	1	0	0	1	0	0	2
HUN	1	0	1	0	1	0	1	1	1	6
IRL	0	0	1	0	0	0	0	1	0	2
PRT	0	0	0	0	1	1	0	0	0	2
SWE	0	0	0	0	0	0	0	1	0	1
Total	1	1	2	1	2	2	2	5	1	17

Notes: The table reports missing (those with the value of zero) bilateral observations in the OECD immigration data for the finance sector. Although there are 17 missing observations for each type of worker employed in finance, these missing observations overlap in only 7 cases.

Table A6: Immigration Stocks and Wages in Other Sectors -- Unskilled Immigrants

	(1)	(2)	(3)	(4)
A. Unskilled immigration in Health Services				
Dependent variable:	log(mL_health)		(mL_health/mL)*100	
Log(wL_health)	1.979***	-3.323***	0.879	-14.71***
	(0.417)	(0.959)	(1.070)	(2.465)
Log(wL_nonhealth)		6.338***		18.64***
		(1.017)		(2.725)
Observations	197	197	197	197
R-squared	0.413	0.522	0.132	0.220
B. Unskilled immigration in Manufacturing				
Dependent variable:	log(mL_manuf)		(mL_manuf/mL)*100	
Log(wL_manuf)	1.701***	4.899***	-9.680***	-6.808*
	(0.368)	(1.124)	(1.928)	(3.578)
Log(wL_nonmanuf)		-4.242***		-3.809
		(1.441)		(5.198)
Observations	192	192	187	187
R-squared	0.479	0.505	0.269	0.270
C. Unskilled immigration in Real Estate and Business Services				
Dependent variable:	log(mL_rebus)		(mL_rebus/mL)*100	
Log(wL_rebus)	2.600***	0.858	-6.842***	-7.089**
	(0.567)	(0.749)	(2.325)	(3.081)
Log(wL_nonrebus)		1.622***		0.230
		(0.532)		(1.347)
Observations	190	190	190	190
R-squared	0.475	0.500	0.155	0.155

Notes: m denotes imgration stocks in 2000, and w denotes wages in 1999. H denotes high-skill and L denotes low-skill workers, where high-skill is consistently defined as four-year college or university degree. "health" denotes employment in health and social works and "nonhealth" denotes employment outside of health and social works and agriculture. "manuf" denotes employment in manufacturing and "nonmanuf" denotes employment outside of manufacturing and agriculture. "rebus" denotes employment in real estate, renting and business activities and "nonrebus" denotes employment outside of real estate, renting and business activities and agriculture. All regressions include source country fixed effects and the following gravity variables: contiguity indicator, commonlanguage indicator, and log distance between capital cities. Country sample: XXXX FILL IN LIST XXXX Samples vary slightly due to data availability. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: migration data from OECD XXXX FILL IN DETAILS XXXX and wage data from EU-KLEMS. Distance between capital cities, common language and contiguity indicators are from the CEPII dataset.

Table A7: Finance Relative Wage and Relative Skill Intensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent Variable:	Finance relative wage				Finance skilled relative wage				Finance relative skill intensity				Finance excess wage			
Finance relative share of ICT in capital stock, t-3	0.864*			0.449	0.944*			1.207**	0.167***			0.155***	0.927**			0.703
	(0.474)			(0.454)	(0.501)			(0.506)	(0.0386)			(0.0456)	(0.458)			(0.469)
Domestic credit/GDP, t-3	-0.0584			0.0276	0.157*			0.262***	0.00286			0.0103	-0.0291			0.0666
	(0.0755)			(0.0666)	(0.0827)			(0.0771)	(0.00626)			(0.00669)	(0.0751)			(0.0707)
Financial globalization, t-3	0.366***			0.251***	0.100*			-0.0472	0.0485***			0.0482***	0.271***			0.164***
	(0.0506)			(0.0479)	(0.0589)			(0.0554)	(0.00420)			(0.00471)	(0.0534)			(0.0511)
International capital restrictions, t-3		0.105***	0.143***	0.0995***		0.0483**	0.0841***	0.0832***		0.0139***	0.00831***	-0.000477		0.109***	0.139***	0.107***
		(0.0225)	(0.0261)	(0.0258)		(0.0239)	(0.0307)	(0.0311)		(0.00325)	(0.00308)	(0.00244)		(0.0224)	(0.0280)	(0.0287)
Privatization, t-3		-0.00402	-0.0534	-0.0392		-0.00714	-0.0372	-0.0454		-0.0137***	-0.0136***	-0.0127***		-0.0182	-0.0490	-0.0382
		(0.0353)	(0.0425)	(0.0407)		(0.0332)	(0.0448)	(0.0442)		(0.00481)	(0.00501)	(0.00386)		(0.0312)	(0.0413)	(0.0410)
Entry barriers, t-3		-0.0291	-0.123***	-0.151***		-0.0573**	-0.0719*	-0.120***		5.69e-05	0.00163	-0.00416		-0.118***	-0.130***	-0.158***
		(0.0254)	(0.0332)	(0.0324)		(0.0265)	(0.0375)	(0.0379)		(0.00387)	(0.00422)	(0.00323)		(0.0249)	(0.0346)	(0.0350)
Banking supervision, t-3		0.135***	0.186***	0.163***		0.127***	0.162***	0.200***		0.0109***	0.0117***	0.00857***		0.146***	0.177***	0.172***
		(0.0245)	(0.0294)	(0.0292)		(0.0233)	(0.0318)	(0.0325)		(0.00333)	(0.00345)	(0.00278)		(0.0219)	(0.0294)	(0.0302)
Directed credit, t-3		-0.0452**	-0.00715	0.0210		0.0176	0.0191	0.00773		-0.00800***	-0.00420	0.00132		-0.0290	-0.0215	-0.00157
		(0.0209)	(0.0282)	(0.0271)		(0.0203)	(0.0323)	(0.0322)		(0.00293)	(0.00343)	(0.00264)		(0.0190)	(0.0298)	(0.0299)
Interest rate control, t-3		0.0553***	0.0799***	0.0391*		0.0451**	0.0696***	0.0423*		0.00486*	0.00538**	-0.00178		0.0353*	0.0620***	0.0332
		(0.0190)	(0.0213)	(0.0214)		(0.0196)	(0.0235)	(0.0243)		(0.00287)	(0.00260)	(0.00206)		(0.0183)	(0.0217)	(0.0223)
Sample	Full	Full	1∩2	1∩2	Full	Full	5∩6	5∩6	Full	Full	9∩10	9∩10	Full	Full	13∩14	13∩14
Observations	258	399	236	236	232	320	222	222	230	316	218	218	233	321	223	223
R-squared, within	0.281	0.230	0.406	0.491	0.171	0.225	0.280	0.354	0.722	0.442	0.508	0.732	0.221	0.306	0.349	0.409
Number of countries	13	20	13	13	13	20	13	13	13	20	13	13	13	20	13	13

Note: All regressions include country fixed effects and year fixed effects. The right hand side variables are lagged 3 periods. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). The sample ends in 1998. Observation on the top and bottom 1% of the distribution of the dependent variables are dropped from the regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Finance Relative Wage and Relative Skill Intensity, Predictive Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Dependent Variable:	Change in finance relative wage, t to t+3				Change in finance skilled relative wage, t to t+3				Change in finance relative skill intensity, t to t+3				Change in finance excess wage, t to t+3			
Finance relative share of ICT in capital stock, t-3 to t	0.476			0.461	-0.0773			0.206	-0.0102			0.00174	-0.183			0.0965
	(0.545)			(0.483)	(0.475)			(0.495)	(0.0439)			(0.0483)	(0.468)			(0.482)
Domestic credit/GDP, t-3 to t	-0.0806			-0.0728	-0.0938			-0.114	-0.0158**			-0.0146**	-0.155**			-0.130*
	(0.0864)			(0.0723)	(0.0774)			(0.0769)	(0.00706)			(0.00737)	(0.0758)			(0.0745)
Financial globalization, t-3 to t	0.315***			0.117**	0.130***			0.0855	0.00962**			0.00779	0.159***			0.0949*
	(0.0524)			(0.0517)	(0.0492)			(0.0524)	(0.00444)			(0.00508)	(0.0475)			(0.0512)
International capital restrictions, t-3 to t		0.0759***	0.0968***	0.102***		0.0474**	0.0592**	0.0626**		0.00138	-0.000375	-0.000163		0.0632***	0.0792***	0.0817***
		(0.0182)	(0.0226)	(0.0230)		(0.0208)	(0.0254)	(0.0261)		(0.00240)	(0.00249)	(0.00256)		(0.0216)	(0.0248)	(0.0254)
Privatization, t-3 to t		0.00655	-1.52e-05	0.00517		-0.0140	-0.0358	-0.0308		-0.00169	-0.00328	-0.00277		-0.0220	-0.0377	-0.0312
		(0.0219)	(0.0277)	(0.0278)		(0.0240)	(0.0286)	(0.0287)		(0.00272)	(0.00280)	(0.00280)		(0.0248)	(0.0279)	(0.0279)
Entry barriers, t-3 to t		-0.0350*	-0.0276	-0.0279		0.00402	0.0122	0.0135		-0.00559**	-0.00537**	-0.00520**		-0.0309	-0.0137	-0.0122
		(0.0190)	(0.0245)	(0.0243)		(0.0207)	(0.0260)	(0.0260)		(0.00235)	(0.00248)	(0.00247)		(0.0216)	(0.0251)	(0.0250)
Banking supervision, t-3 to t		0.0474***	0.0198	0.0204		-0.00624	0.00191	-0.00169		0.00622***	0.00232	0.00192		0.000458	-0.00306	-0.00679
		(0.0179)	(0.0220)	(0.0220)		(0.0198)	(0.0234)	(0.0236)		(0.00226)	(0.00226)	(0.00228)		(0.0205)	(0.0228)	(0.0229)
Directed credit, t-3 to t		-0.00325	0.00288	-0.00362		0.00352	0.0194	0.0150		0.00245	0.00337	0.00299		-0.0115	-0.000274	-0.00568
		(0.0180)	(0.0238)	(0.0241)		(0.0190)	(0.0243)	(0.0249)		(0.00211)	(0.00231)	(0.00237)		(0.0197)	(0.0237)	(0.0242)
Interest rate control, t-3 to t		-0.00841	0.0177	0.0160		-0.0165	0.00519	0.00217		0.000285	0.00211	0.00178		-0.00443	0.0280	0.0242
		(0.0144)	(0.0170)	(0.0170)		(0.0170)	(0.0195)	(0.0196)		(0.00192)	(0.00188)	(0.00188)		(0.0179)	(0.0191)	(0.0191)
Sample	Full	Full	1∩2	1∩2	Full	Full	5∩6	5∩6	Full	Full	9∩10	9∩10	Full	Full	13∩14	13∩14
Observations	260	392	237	237	217	277	206	206	222	277	210	210	219	276	207	207
R-squared	0.131	0.069	0.090	0.116	0.039	0.024	0.045	0.068	0.043	0.054	0.055	0.084	0.068	0.046	0.080	0.109
Number of countries	13	19	13	13	13	18	13	13	13	18	13	13	13	18	13	13

Note: All regressions include country fixed effects. The right hand side deregulation variables are the three-year changes (from t-3 to t) for each index. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables as well as relative ICT use in finance is calculated from EU KLEMS database. Domestic bank credit data are from Schularick and Taylor (2012) and is normalized by GDP. Financial globalization is log(foreign assets + liabilities/GDP), data are from Lane and Milesi-Ferretti (2007). The sample ends in 2000. Observation on the top and bottom 1% of the distribution of the dependent variables are dropped from the regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.