

# Wages and Human Capital in Finance: International Evidence, 1970–2011

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## ONLINE APPENDIX

### A Data

#### A.1 EU KLEMS database

We use the 2008 release of the EU KLEMS. All data are available from [www.euklems.net](http://www.euklems.net).

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), South 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.

We checked comparability of the 2008 release with later editions of the EU KLEMS, in 2009 and 2011. Aggregate series and relative wage series computed based on them are very similar. The main disadvantage of later releases is that skill composition is not available. For this reason we only use the 2008 release.

#### A.2 STAN data

We supplement the EU KLEMS data (1970–2005) with data from the OECD’s Structural Analysis (STAN) database, available from <http://stats.oecd.org>. This source is available for several countries in the EU KLEMS sample. To this we add Norway, which does not report data in the EU KLEMS. We use the STAN data only in order to extend the finance relative wage series  $\omega_t$  (equation 1 in the text), based on EU KLEMS data, until 2011, 2010 or 2009, depending on the country.

We use the STAN ISIC Rev.4 version (STAN4), which is available until 2011 or 2010, whenever available. In other cases we used the STAN ISIC Rev.3 version (STAN3), which is available until 2009. We checked comparability of the STAN4, STAN3 and EU KLEMS data for the years in which they overlap. When the samples overlap aggregate series and relative wage series computed based

on them are very similar. In cases of significant deviations, we use the STAN series that matched best the EU KLEMS series. Here we explain how this was done for the countries that were affected

- Austria: EU KLEMS until 1995 (where EU KLEMS and STAN4 intersect); STAN4 from 1996.
- Belgium, Germany, Denmark, Finland, France, Hungary, Italy, Netherlands, United States: EU KLEMS until 2005; STAN4 from 2006 with level correction to make it match exactly EU KLEMS level in 2005. This correction was minor.
- Spain, United Kingdom, Ireland, Sweden, Japan, South Korea, Luxembourg: EU KLEMS until 2005; STAN3 from 2006 with level correction to make it match EU KLEMS level in 2005. This correction was minor. Note that STAN4 is unavailable for these countries.
- Norway: STAN4 for all years, since there are no EU KLEMS data for this country. We do not include Norway in any of the regression samples.
- Slovenia: STAN4 for all years, despite available EU KLEMS data, because STAN4 data are much less noisy. This is immaterial, because Slovenia is not in any of the regression samples.

### A.3 Finance subsectors classification

Both EU KLEMS and STAN databases report the same three subsectors of the financial sector, with very similar subsectors classification. We use only the EU KLEMS for subsectors analysis, where industries are classified according to the European NACE revision 1 classification. This classification is very close to the International Standard Industrial Classification (ISIC), both revision 3 and 4, which are use by STAN. Here we provide details on this classification for "J Financial Intermediation", with descriptive notes:

65 *Financial intermediation, except insurance and pension funding.*

- 651 *Monetary intermediation.*
  - 6511 *Central banking.* This class includes taking deposits which are used for clearance between financial institutions, supervising banking operations and possibly holding the country's exchange reserves and issuing, managing the country's currency, and acting as banker to the government. The activities of central banks will vary for institutional reasons.
  - 6519 *Other monetary intermediation.* This class includes monetary intermediation of monetary institutions other than central banks. Included are the activities of banks, discount houses, savings banks, and also specialized institutions granting credit for house purchase that also take deposits
- 659 *Other financial intermediation.*
  - 6591 *Financial leasing.* Leasing where the term approximately covers the expected life of the asset and the lessee acquires substantially all the benefits of its use and takes all the risks associated with its ownership. The asset may or may not eventually be transferred. Exclusion: Operational leasing is classified in division 71 (Renting of machinery and equipment without operator and of personal and household goods), according to type of goods leased.

- 6592 *Other credit granting.* This class includes financial intermediation primarily concerned with making loans by institutions not involved in monetary intermediation, including the granting of consumer credit, the provision of long term finance to industry, and money lending outside the banking system. The granting of credit for house purchase by specialized institutions that do not also take deposits is included in this class. Exclusions: Financial leasing is classified in class 6591 and operational leasing in division 71 (Renting of machinery and equipment without operator and of personal and household goods).
- 6599 *Other financial intermediation n.e.c.* This class includes other financial intermediation primarily concerned with distributing funds other than by making loans. This includes investment in securities (e.g. shares, bonds, bills, unit trust units, etc.) including dealing for own account by securities dealers, investment in property where this is carried out primarily for other financial intermediaries (e.g. property unit trusts) and writing swaps, options and other hedging arrangements. Activities of financial holding companies are included.

66 *Insurance and pension funding, except compulsory social security.*

- 660 *Insurance and pension funding, except compulsory social security.*
  - 6601 *Life insurance.* This class includes life insurance (including reinsurance) and other long term insurance, with or without a substantial savings element, involving the collection and investment of funds.
  - 6602 *Pension funding.* This class includes the provision of retirement incomes, including activities involving the collection and investment of funds. Exclusions: Funding and administration of compulsory social security programmes are classified in class 7530 (Compulsory social security activities).
  - 6603 *Non-life insurance.* This class includes insurance (including reinsurance) of non-life business (e.g. accident, fire, health, property, motor, marine, aviation, transport, pecuniary loss and liability insurance).

67 *Activities auxiliary to financial intermediation.*

- 671 *Activities auxiliary to financial intermediation, except insurance and pension funding.*
  - 6711 *Administration of financial markets.* This class includes the operation and supervision of financial markets other than by public authorities and includes the activities of stock exchanges and other bodies that regulate or supervise the activities of financial markets including exchanges for commodity futures contracts.
  - 6712 *Security dealing activities.* This class includes dealing in financial markets on behalf of others (e.g. stock brokering) and related activities.
  - 6719 *Activities auxiliary to financial intermediation n.e.c.* This class includes all activities auxiliary to financial intermediation not classified elsewhere, including financial advisers, mortgage advisers and brokers, bureaux de change, etc. Exclusions: Insurance agents' and other activities closely related to insurance and pension funding are classified in class 6720 (Activities auxiliary to insurance and pension funding). Business brokerage activities (i.e. arranging for the purchase and sale of small and medium-sized businesses, including professional practices) and patent brokerage activities (arranging for the purchase and sale of patents) are classified in 7499 (Other business activities n.e.c.).

- 672 *Activities auxiliary to insurance and pension funding.*
  - 6720 *Activities auxiliary to insurance and pension funding.* This class includes activities involved in or closely related to the management of insurance and pension funding other than financial intermediation and includes activities of insurance agents, average and loss adjusters, actuaries, and salvage administration. Exclusion: Marine salvage is classified in class 6303 (Other supporting transport activities).

#### A.4 Financial deregulation index

In order to capture the regulatory environment we rely on widely used data on financial reforms from the Abiad, Detragiache, and Tressel (2008) dataset. The dataset includes measures of financial reform along 7 dimensions:

1. *Credit controls.* This measure combines the restrictiveness of bank reserve ratios (>20%, 10-20%, <10%); and whether the government directs credit to certain sectors. Overall, this 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.
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.
3. *Entry barriers/pro-competition measures.* This measure captures: (1) The extent to which foreign banks are allowed to enter the domestic market; (2) Whether entry of new domestic banks is allowed; (3) Whether there are restrictions on bank branching; and (4) whether banks are allowed 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.
4. *Banking supervision.* This measure captures: (1) Whether a country adopted a capital adequacy ratio based on the Basel 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.
5. *Privatization.* This measure captures the degree to which the banking sector is government owned or controlled (>50%, 25-50%, 10-25%, <10%).
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.
7. *Securities market policies.* This measure captures two different dimensions of securities market policy: (1) Whether a country takes measures to develop securities markets; (2) Whether a country's equity market is open to foreign investors.

All measures 1–7 take discrete values from 0 to 3. For complete details on coding see Abiad, Detragiache, and Tressel (2008). We use the aggregate measure of financial deregulation that is the sum of all indices, normalized to be between 0 and 1. Larger values of the deregulation index mean fewer restrictions. Although the word "deregulation" implies changes in the regulatory environment towards fewer restrictions, we keep this wording in order to avoid awkward terms like "unregulation".

## A.5 Domestic credit data and corrections

Our measure of overall domestic credit is *Domestic credit provided by financial sector (% of GDP)*, from the World Bank: "Domestic credit provided by the financial sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The financial sector includes monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies."

The bank credit measure from the World Bank is *Domestic credit to private sector by banks (% of GDP)*: "Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises." This is very similar to the definitions in Jordà, Schularick, and Taylor (2014) (JST), who split bank credit to household versus corporate credit, and to mortgage versus non-mortgage credit.

When examining the World Bank domestic credit series (both overall and bank credit), we detected a few breaks. In order to correct these breaks we spliced series based on the following criterion. In most years bank credit data from JST and from the World Bank are almost identical. Breaks in the World Bank data are invariably deviations from JST data. Therefore, we adjust all observations in which we observe large deviations from JST bank credit data. The source of the breaks is likely the denominator (GDP), because breaks appear both in the *Domestic credit provided by financial sector (% of GDP)* series and in the *Domestic credit to private sector by banks (% of GDP)* series, in the same proportion.

Here we list all corrections made to the *Domestic credit provided by financial sector (% of GDP)* series, as well as one correction to *Domestic credit to private sector by banks (% of GDP)* series for South Korea:

- Belgium 1991/1992 break: multiply all years before 1992 by the 1992/1991 ratio.
- Canada 2000/2001 break: divide all years after 2000 by the 2001/2000 ratio.
- Denmark 1999/2000 break: multiply all years before 2000 by the 2000/1999 ratio.
- France 1976/1977/1978 and 1984/1985 breaks: we correct in two steps, in the following sequence:
  1. Change the value for 1977 from 0.381 to 0.881. In 1976 the value is 0.880, so we assume that "3" was an "8" that got botched up.
  2. Deduct from 1978–1984 observations the average of the difference between 1984 and 1985 and the new difference between 1977 and 1978.
- South Korea 2000/2001 break: we divide all years after 2000 by the 2001/2000 ratio—for both credit concepts.
- Netherlands 1985/1986 break: divide all years before 1986 by the 1985/1986 ratio.
- Sweden 1982/1983 and 2000 break: multiply all years before 1983 by the 1983/1982 ratio; we drop the observation for year 2000.
- United Kingdom 1986/1987 break: multiply all years before 1987 by the 1987/1986 ratio.

Our main source for bank credit is JST data. We use the World Bank data whenever JST does not have it (South Korea, Austria, Portugal, Czech Republic, Slovenia). This gives a maximum of 16 countries with bank credit data: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Sweden, United States, Slovenia. This is the sample for the bank concentration regressions reported in Table A12 and Table A13. We lose Slovenia in all other regressions because it does not report ICT data, leaving us with 15 countries. In addition to this, when we split bank credit we lose Austria, Czech Republic and South Korea because the split is unavailable for these countries.

## A.6 Data on market structure, financial deregulation and relative wages

Here we describe the time-invariant, country-specific  $z_c$  variables that we use in interaction terms with deregulation in the level and predictive regressions, respectively

$$\omega_{c,t} = \theta(z_c \cdot deregulation_{c,t-3}) + \gamma \cdot deregulation_{c,t-3} + \beta' x_{c,t-3} + \alpha_c + \delta_t + \varepsilon_{c,t}$$

and

$$\Delta\omega_{c,t+3} = \theta(z_c \cdot \Delta deregulation_{c,t}) + \gamma \cdot \Delta deregulation_{c,t} + \beta' \Delta x_{c,t} + \alpha_c + \delta_t + \varepsilon_{c,t} .$$

See main text for more details on these specifications.

### Composition of financial intermediation

We use the following variables to test whether deregulation has differential effects depending on the nature of financial intermediation. In particular, we seek indicators for trading and opaque activities:

- **Non-bank domestic credit/GDP.** Non-bank domestic credit data from Jordà, Schularick, and Taylor (2014), as described just above. Average over 1993–1995.
- **Bank non-interest income share of total bank income.** Non-interest related income includes net gains on bank-owned trading of securities and derivatives, net of fees and commissions and other operating income that is not related to (interest bearing) loan income. Source: Financial Development dataset, World Bank. Average over 1997–1999.
- **Stock market capitalization/GDP.** Source: Financial Development dataset, World Bank. Average over 1989–1991.
- **OTC trading turnover ratio to total stock market turnover.** The total average daily turnover of currency and interest rate OTC derivatives. Source: Bank for International Settlement’s (BIS) 1995-2004 Triennial Central Bank Surveys of foreign exchange and derivatives markets. This is an expanded survey performed by the BIS of a broad sample of derivatives dealers—as many as 53 jurisdictions participate—and together these two related sets of markets saw \$9.6 trillion on average each day in notional turnover in 2016. To eliminate double-counting of the size of transactions within a country, which arises when two dealers each report the same transaction, these inter-dealer transactions are halved if both parties are within the same country. This is referred to by the BIS as the “net-gross” basis. Stock market turnover source: Financial Development dataset, World Bank. Average over 1995–1997.
- **OTC trading turnover/GDP.** OTC data again from the BIS’s survey. GDP source: Financial Development dataset, World Bank. Average over 1995–1997.
- **Indicator for global financial center.** This indicator variable takes value one for countries in which there is at least one city deemed a "top 20" global financial center. Cities are ranked across five major areas: financial sector development; business environment; infrastructure factors; human capital; and reputation and general factors. The analysis is based on over 29,000 responses from an online questionnaire together with over 100 indices from organizations such as the World Bank, OECD, and the Economist Intelligence Unit. Source: Global Financial Centres Index, produced by the think-tank Z/Yen, September 2016 revision. Countries in our sample that have a global financial center are Australia, Canada, Germany, United Kingdom, Japan, South Korea, United States.

### Labor market flexibility

We use the following measure of labor market protection to capture the possibility of labor movement across firms. When job security is higher, theory predicts less job-to-job mobility. If deregulation increases competition for talent, then this should have a stronger effect in countries that have more flexible labor markets.

- **Employment protection index.** Strictness of employment protection for regular contracts. Higher values mean stronger job security for workers. Source: OECD indicators of employment protection. Average over 1985–1987.

We also have data on strictness of employment protection for *temporary* contracts, which we believe is less relevant in our context. Nevertheless, since protection of permanent and temporary contracts are highly correlated, regression results using either indicator are very similar.

### Competitiveness and market structure

Although banks do not comprise the entire financial sector, changes in bank concentration over time are indicative of overall financial concentration, especially in countries with a universal banking sector. We use the following variables to capture competition in the banking sector:

- **Bank concentration.** We measure bank concentration by the share of the three largest banks in total commercial banking assets. Total assets include total earning assets, cash and due from banks, foreclosed real estate, fixed assets, goodwill, other intangibles, current tax assets, deferred tax, discontinued operations and other assets. Source: Financial Development dataset, World Bank (originally collected by Bureau van Dijk in the Bankscope dataset). Average over 1997-1999. Source: Financial Development dataset, World Bank (originally collected by Bureau van Dijk in the Bankscope dataset). Average over 1997-1999.
- **Revenue-based competition index (H-statistic).** The H-statistic measures the elasticity of banks revenues relative to input prices. Under perfect competition, an increase in input prices raises both marginal costs and total revenues by the same amount, and hence the H-statistic equals 1. Under a monopoly, an increase in input prices results in a rise in marginal costs, a fall in output, and a decline in revenues, leading to an H-statistic less than or equal to 0. When H-statistic is between 0 and 1, the system operates under monopolistic competition. Source: Financial Development dataset, World Bank. Average over 1996-1998.
- **Profit-based competition index (|Boone elasticity|).** The Boone elasticity is the elasticity of profits with respect to marginal costs. To obtain the elasticity, the log of bank profits (measured by return on assets) is regressed on the log of marginal costs. An increase in the absolute value of the (negative) Boone elasticity implies a more competitive environment. The rationale behind this is that higher profits are achieved by more-efficient banks. Hence, the more negative the Boone indicator, the higher the degree of competition is, because the effect of reallocation is stronger. Source: Financial Development dataset, World Bank. Average over 1997-1999.

## B ICT and complementarity with high skilled workers

A simple way to characterize complementarity is by using the following equation:

$$S^{\text{skilled}} = \eta + \alpha \ln \left( \frac{w^{\text{skilled}}}{w^{\text{unskilled}}} \right) + \beta \ln \left( \frac{C}{Q} \right) + \gamma \ln \left( \frac{K}{Q} \right) + \delta \ln Q, \quad (1)$$

where  $S^{\text{skilled}}$  is the wage bill share of skilled labor,  $C$  is ICT capital,  $K$  is all other forms of capital, and  $Q$  is output. We provide complete derivations below. Here  $\beta$  and  $\gamma$  capture the degree of complementarity of skilled labor with ICT and other types of capital. Positive values imply complementarity to skilled labor. To be precise, positive  $\beta$  or  $\gamma$  imply that either type of capital (ICT or other, respectively) is more complementary with skilled labor relative to unskilled labor. If the underlying production function is constant returns to scale, then  $\delta = 0$ . While this is a reasonable assumption at the industry or aggregate level, we do not impose it.

We estimate empirical versions of (1) separately for finance, for the entire economy, and for the NFFP sector in panel data from the EU KLEMS dataset:

$$S_{ct} = \eta_c + \alpha \ln \left( \frac{w^{\text{skilled}}}{w^{\text{unskilled}}} \right)_{ct} + \beta \ln \left( \frac{C}{Q} \right)_{ct} + \gamma \ln \left( \frac{K}{Q} \right)_{ct} + \delta \ln Q_{ct} + \varepsilon_{ct} , \quad (2)$$

where  $c$  denotes countries,  $t$  denotes years,  $\eta_c$  are country fixed effects, and  $\varepsilon_{ct}$  is the error term. Our identifying assumption is that technology is stable over time, and that its curvature is the same across countries within an industry (the coefficients  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$  do not vary over time or countries within an industry). The  $\eta_c$  terms allow technology to be different across countries within industries. All variables are industry-specific, including relative wages.

We use industry-specific quantity indices from the EU KLEMS dataset for  $C$ ,  $K$  and  $Q$ , which are equal to 100 in 1995. This 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  $\eta_c$ . Quantity indices are available for 22 countries in the EU KLEMS dataset, for different time periods. These are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Spain, Finland, France, Germany, Hungary, Ireland, Italy, Japan, South Korea, Luxembourg, Netherlands, Portugal, Slovenia, Sweden, United Kingdom, United States (NAICS).

Quantity indices are available for financial intermediation (finance in our taxonomy) and the aggregate economy. We manipulate indices for the aggregate economy, finance, farm and public sectors, to obtain indices for NFFP, as described below. Doing this reduces the sample to 16 countries. We follow standard methodology and estimate (2) by TSLS, instrumenting for the capital shares using first, second and third lagged values; results using other lags are similar.

Table A5 reports the results, which indicate that ICT is complementary to skill for finance, the entire economy and the NFFP sector, but it is more complementary to skill in finance. The coefficient to  $\ln(C/Q)$  is larger in finance, and this difference is also highly statistically significant. These results hold whether or not we include  $\ln Q$  (i.e., whether we assume a constant returns to scale technology) or not. In untabulated results, we find similar results in specifications that constrain the country dummies to be equal in finance, the aggregate and NFFP. These results are available upon request.

## B.1 Derivation of complementarity equation

Let there be two types of capital,  $k_1$  and  $k_2$ , which are quasi-fixed, and let there be two variable inputs: Skilled and unskilled labor,  $h$  and  $l$ , respectively (what follows extends to additional variable and/or quasi-fixed inputs). In this case, 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:

$$\begin{aligned}
\ln(c) = & \eta_h \ln(w_h) + \eta_l \ln(w_l) + \eta_{k_1} \ln(k_1) + \eta_{k_2} \ln(k_2) + \eta_q \ln(q) + \\
& + \frac{1}{2} \left[ \alpha_{hh} \ln(w_h)^2 + \alpha_{hl} \ln(w_h) \ln(w_l) + \alpha_{lh} \ln(w_l) \ln(w_h) + \alpha_{ll} \ln(w_l)^2 \right] \\
& + \alpha_{k_1 k_1} \ln(k_1)^2 + \alpha_{k_2 k_2} \ln(k_2)^2 + \alpha_{yy} \ln(q)^2 \\
& + \gamma_{hk_1} \ln(w_h) \ln(k_1) + \gamma_{hk_2} \ln(w_h) \ln(k_2) + \gamma_{hy} \ln(w_h) \ln(q) \\
& + \gamma_{lk_1} \ln(w_l) \ln(k_1) + \gamma_{lk_2} \ln(w_l) \ln(k_2) + \gamma_{ly} \ln(w_l) \ln(q) \\
& + \gamma_{k_1 k_2} \ln(k_1) \ln(k_2) + \gamma_{k_1 q} \ln(k_1) \ln(q) + \gamma_{k_2 q} \ln(k_2) \ln(q) ,
\end{aligned}$$

where  $q$  is output. Symmetry implies  $\alpha_{hl} = \alpha_{lh}$ .

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

$$S = \eta_h + \alpha_{hh} \ln(w_h) + \alpha_{hl} \ln(w_l) + \gamma_{hk_1} \ln(k_1) + \gamma_{hk_2} \ln(k_2) + \gamma_{hy} \ln(q) .$$

By linear homogeneity of cost with respect to prices, cost shares are homogenous of degree zero; therefore  $\alpha_{hh} + \alpha_{hl} = 0$ . Write  $\gamma_{hk_1} + \gamma_{hk_2} + \gamma_{hy} = \delta$ . Using these gives

$$S = \eta + \alpha \ln\left(\frac{w_h}{w_l}\right) + \gamma_{k_1} \ln\left(\frac{k_1}{q}\right) + \gamma_{k_2} \ln\left(\frac{k_2}{q}\right) + \delta \ln(q) ,$$

which is used in the main text. If the production function is linearly homogeneous, then  $\delta = 0$  (increasing all inputs by same factor increases output by same factor, but this should not affect the cost share).

## B.2 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,  $Q_{nffp,1995} = 100$ .

## C 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, Luxembourg, 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 A15 we report the incidence of missing observations.

When we estimate migration gravity equations using TSLS, we lose 14 additional observations because deregulation data for Luxembourg 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.

## References

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Table A1: Finance Relative Wages and Relative Skill Intensity

A. Finance relative wages												
	Levels						Changes					
	1975	1985	1995	2005	2007	2010	1975-1985	1985-1995	1995-2005	2005-2007	1985-2007	2007-2010
Australia	1.34	0.61	1.69	1.97			-0.73	1.08	0.28		1.36	
Austria	1.74	1.65	1.69	1.70	1.69	1.66	-0.09	0.04	0.01	-0.01	0.03	-0.02
Belgium	1.62	1.75	1.66	1.59	1.59	1.56	0.12	-0.08	-0.08	0.00	-0.16	-0.02
Canada*	1.21	1.28	1.35	1.59			0.07	0.07	0.24		0.31	
Czech Republic			1.78	2.10	2.13	2.04			0.32	0.04	0.35	-0.09
Denmark	1.29	1.29	1.45	1.55	1.59	1.63	0.00	0.16	0.10	0.04	0.29	0.04
Finland	1.12	1.20	1.36	1.33	1.38	1.35	0.09	0.16	-0.03	0.05	0.18	-0.03
France	1.49	1.31	1.48	1.62	1.64	1.60	-0.17	0.17	0.14	0.02	0.33	-0.04
Germany	1.41	1.38	1.45	1.57	1.61	1.58	-0.03	0.07	0.12	0.04	0.23	-0.03
Hungary			1.51	1.89	2.14	1.85			0.38	0.25	0.63	-0.29
Ireland	1.86	1.53	1.64	1.51	1.70		-0.33	0.10	-0.12	0.18	0.17	
Italy	3.15	2.02	2.11	1.96	2.07	1.95	-1.14	0.09	-0.15	0.11	0.06	-0.12
Japan	1.53	1.66	1.73	1.66	1.66		0.13	0.07	-0.07	0.00	0.00	
South Korea	2.48	1.79	1.63	1.34	1.37		-0.69	-0.16	-0.29	0.04	-0.42	
Luxembourg	1.23	1.90	1.99	2.39	2.47		0.67	0.09	0.40	0.09	0.58	
Netherlands	1.28	1.48	1.60	1.79	1.86	1.86	0.20	0.12	0.19	0.07	0.38	-0.01
Norway	1.21	1.23	1.34	1.60	1.70	1.69	0.02	0.12	0.25	0.10	0.47	-0.01
Portugal	2.80	2.31	2.68	2.73			-0.49	0.37	0.05		0.42	
Slovenia			1.57	1.51	1.61	1.48			-0.06	0.10	0.04	-0.13
Spain	1.58	1.84	1.90	2.21	2.25		0.25	0.07	0.30	0.04	0.41	
Sweden	1.50	1.29	1.39	1.52	1.55		-0.21	0.10	0.13	0.03	0.26	
United Kingdom	1.39	1.76	1.30	1.55	1.77		0.37	-0.46	0.25	0.22	0.01	
United States	1.13	1.24	1.55	1.90	1.95	1.88	0.11	0.32	0.35	0.05	0.72	-0.08
Average	1.617	1.525	1.646	1.763	1.787	1.702	-0.091	0.125	0.118	0.073	0.290	-0.065

B. Finance relative skilled wages									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
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	0.41	
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	0.20	
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	-0.86	
Japan	1.27	1.40	1.44	1.41	0.13	0.04	-0.03	0.02	
South Korea	1.83	1.60	1.60	1.57	-0.23	0.00	-0.03	-0.03	
Luxembourg			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	0.17	
United States		1.21	1.41	1.74		0.20	0.34	0.53	
Average		1.358	1.441	1.496		0.089	0.056	0.117	

C. Finance relative skill intensity									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
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	0.087	
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	0.066	
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	-0.041	
Japan	0.100	0.142	0.218	0.303	0.042	0.076	0.084	0.161	
South Korea	0.089	0.066	0.031	-0.046	-0.022	-0.035	-0.077	-0.112	
Luxembourg			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	0.024	
United States		0.093	0.128	0.129		0.036	0.001	0.036	
Average		0.057	0.095	0.133		0.030	0.038	0.059	

Notes: The table reports wages and skill intensity in finance relative to the non-farm, non-finance private sector (NFFP) in different years and the changes between those years. The 1985-2007 and 1985-2005 changes are the total changes from the earliest to latest years that data is available for each series by country. 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 until 2005; STAN from 2006 and on. Norway series uses only STAN data. See complete details in text.

Table A2: Finance Relative Wages: Subsectors

A. Financial intermediation, except insurance and pension funding									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
Australia*	1.06	0.59	1.37	1.46	-0.46	0.78	0.09	0.86	
Austria*		1.77	1.77	1.76		-0.01	0.00	-0.01	
Belgium*	1.75	1.90	1.91	1.77	0.16	0.01	-0.14	-0.14	
Canada									
Czech Republic			1.83	2.22			0.39		
Denmark*	1.32	1.30	1.37	1.47	-0.02	0.07	0.11	0.17	
Spain*	1.63	1.92	2.09	2.88	0.28	0.17	0.79	0.97	
Finland*	1.05	1.13	1.29	1.25	0.08	0.16	-0.04	0.12	
France*		1.40	1.51	1.64		0.11	0.13	0.24	
Germany			1.42	1.55			0.13		
Hungary			1.71	2.06			0.36		
Ireland	0.98	0.82	1.07	1.42	-0.16	0.26	0.35		
Italy									
Japan	1.63	1.77	1.75	1.72	0.13	-0.01	-0.03		
South Korea	2.35	1.94	1.59	1.44	-0.41	-0.35	-0.15		
Luxembourg			2.05	2.32			0.28		
Netherlands			1.58	1.91			0.32		
Portugal			2.74	2.81			0.06		
Slovenia			1.53	1.42			-0.11		
Sweden*	1.40	1.21	1.34	1.67	-0.20	0.13	0.33	0.47	
United Kingdom*	1.46	1.90	1.45	1.80	0.45	-0.45	0.35	-0.10	
United States*	0.88	1.05	1.24	1.46	0.17	0.19	0.22	0.41	
Average of 10*		1.42	1.53	1.72		0.12	0.18	0.30	

B. Insurance and pension funding, except compulsory social security									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
Australia*	1.70	0.58	2.26	1.92	-1.12	1.68	-0.34	1.34	
Austria*		1.36	1.48	1.38		0.11	-0.09	0.02	
Belgium*	1.38	1.58	1.66	1.77	0.20	0.08	0.12	0.20	
Canada									
Czech Republic			1.40	1.74			0.34		
Denmark*	1.04	1.15	1.52	1.63	0.11	0.37	0.11	0.48	
Spain*	1.52	1.72	1.61	1.64	0.19	-0.11	0.03	-0.08	
Finland*	1.28	1.36	1.31	1.27	0.08	-0.05	-0.04	-0.09	
France*		1.22	1.46	1.57		0.24	0.11	0.35	
Germany			1.59	1.75			0.16		
Hungary			1.27	1.24			-0.03		
Ireland	2.16	1.75	2.89	1.74	-0.41	1.14	-1.15		
Italy									
Japan	1.52	1.68	1.77	1.61	0.15	0.10	-0.16		
South Korea		1.43	2.20	1.45		0.77	-0.75		
Luxembourg			2.32	2.69			0.37		
Netherlands			1.76	1.75			0.00		
Portugal			2.71	2.51			-0.20		
Slovenia			1.94	1.32			-0.62		
Sweden*	1.61	1.44	1.46	1.32	-0.17	0.02	-0.14	-0.12	
United Kingdom*	1.42	1.93	1.30	0.93	0.51	-0.63	-0.37	-1.01	
United States*	1.06	1.21	1.45	1.66	0.15	0.24	0.20	0.45	
Average of 10*		1.36	1.55	1.51		0.19	-0.04	0.15	

C. Activities auxiliary to financial intermediation									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
Australia*	2.28	0.74	2.18	3.10	-1.54	1.44	0.92	2.36	
Austria*		1.44	1.20	1.07		-0.24	-0.13	-0.36	
Belgium*	0.92	0.85	0.81	1.20	-0.07	-0.04	0.38	0.34	
Canada									
Czech Republic			1.57	1.73			0.16		
Denmark*	1.25	1.57	1.52	1.60	0.33	-0.06	0.08	0.02	
Spain*	0.96	1.20	1.13	0.59	0.23	-0.07	-0.54	-0.61	
Finland*		1.44	2.52	1.78		1.09	-0.74	0.35	
France*		0.89	1.26	1.41		0.38	0.15	0.53	
Germany			1.12	1.16			0.04		
Hungary			0.60	2.17			1.56		
Ireland	9.12	4.83	1.65	1.74	-4.29	-3.18	0.08		
Italy									
Japan									
South Korea			1.56	1.21			-0.35		
Luxembourg			1.54	2.50			0.95		
Netherlands			1.54	1.44			-0.10		
Portugal			2.92	3.43			0.52		
Slovenia			1.68	1.29			-0.39		
Sweden*	1.93	1.47	1.50	1.29	-0.46	0.03	-0.22	-0.19	
United Kingdom*	1.22	1.29	1.01	1.52	0.07	-0.29	0.51	0.23	
United States*		2.29	2.99	4.14		0.70	1.15	1.85	
Average of 10*		1.32	1.61	1.77		0.29	0.16	0.45	

- **Central banking**

- **Other monetary intermediation**

Includes monetary intermediation of monetary institutions other than central banks. Included are the activities of banks, discount houses, savings banks, and also specialized institutions granting credit for house purchase that also take deposits.

- **Financial leasing**

- **Other credit granting**

Includes financial intermediation primarily concerned with making loans by institutions not involved in monetary intermediation, including the granting of consumer credit, the provision of long term finance to industry, and money lending outside the banking system. The granting of credit for house purchase by specialized institutions that do not also take deposits is included in this class.

- **Other financial intermediation n.e.c.**

Includes other financial intermediation primarily concerned with distributing funds other than by making loans. This includes investment in securities (e.g. shares, bonds, bills, unit trust units, etc.) including dealing for own account by securities dealers, investment in property where this is carried out primarily for other financial intermediaries (e.g. property unit

- **Life insurance**

This class includes life insurance (including reinsurance) and other long term insurance, with or without a substantial savings element, involving the collection and investment of funds.

- **Pension funding**

This class includes the provision of retirement incomes, including activities involving the collection and investment of funds. Exclusions: Funding and administration of compulsory social security programmes are classified in class 7530 (Compulsory social security activities).

- **Non-life insurance**

This class includes insurance (including reinsurance) of non-life business (e.g. accident, fire, health, property, motor, marine, aviation, transport, pecuniary loss and liability insurance).

- **Administration of financial markets**

Includes the operation and supervision of financial markets other than by public authorities and includes the activities of stock exchanges and other bodies that regulate or supervise the activities of financial markets including exchanges for commodity futures contracts.

- **Security dealing activities**

Includes dealing in financial markets on behalf of others (e.g. stock broking) and related activities.

- **Activities auxiliary to financial intermediation n.e.c.**

Includes all activities auxiliary to financial intermediation not classified elsewhere, including financial advisers, mortgage advisers and brokers, bureaux de change, etc.

- Exclusions: Insurance agents' and other activities closely related to insurance and pension funding are classified in "Activities auxiliary to insurance and pension funding" below. Business brokerage activities (i.e. arranging for the purchase and sale of small and medium-sized businesses, including professional practices) and patent brokerage activities (arranging for the purchase and sale of patents) are classified "Other business activities n.e.c.".

- **Activities auxiliary to insurance and pension funding**

Includes activities of insurance agents, average and loss adjusters,

Notes: The table reports wages for subsectors within finance relative to the non-farm, non-finance private sector (NFFP) in different years and the changes between those years. \* Countries included in the Average of 10 are marked with an asterisk; these countries have data on all components from 1985 onwards. The boxes adjacent to panels A to C contain information on the composition of each financial subsector. More detail is provided in the text appendix. Data: EU KLEMS.

Table A3: Subsector Employment Shares within Finance

A. Financial intermediation, except insurance and pension funding									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
Australia*	65.1	66.4	60.6	53.9	1.3	-5.9	-6.7	-12.6	
Austria*	67.5	67.6	66.7	65.5	0.1	-1.0	-1.1	-2.1	
Belgium*	56.3	56.6	56.5	56.8	0.2	-0.1	0.4	0.3	
Canada									
Czech Republic			73.4	55.4			-18.0		
Denmark*	72.3	75.0	72.8	68.4	2.7	-2.2	-4.5	-6.6	
Spain*	80.5	82.4	69.9	58.4	1.9	-12.5	-11.4	-23.9	
Finland*	82.0	82.5	75.0	68.4	0.5	-7.5	-6.6	-14.1	
France*	65.8	65.1	60.7	58.7	-0.7	-4.4	-2.0	-6.4	
Germany			63.5	57.9			-5.6		
Hungary			67.1	63.8			-3.3		
Ireland	62.5	61.3	63.3	64.7	-1.2	2.0	1.4		
Italy			64.0	60.3			-3.7		
Japan	61.1	59.2	58.0	59.3	-1.9	-1.2	1.3		
South Korea	100.0	86.2	70.1	65.3	-13.8	-16.1	-4.9		
Luxembourg			81.8	70.6			-11.2		
Netherlands	61.3	62.3	56.8	56.3	0.9	-5.4	-0.6		
Portugal			71.6	70.7			-0.8		
Slovenia			64.7	63.6			-1.1		
Sweden*	67.9	69.6	66.7	56.7	1.7	-3.0	-10.0	-13.0	
United Kingdom*	58.1	55.7	54.0	57.5	-2.4	-1.8	3.6	1.8	
United States*	56.4	47.2	42.4	46.3	-9.2	-4.8	3.9	-0.8	
Average of 10*		66.8	62.5	59.1		-4.3	-3.4	-7.8	

B. Insurance and pension funding, except compulsory social security									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
Australia*	22.3	22.0	18.9	19.7	-0.3	-3.1	0.8	-2.3	
Austria*	31.2	29.4	28.9	24.1	-1.8	-0.5	-4.8	-5.3	
Belgium*	23.8	22.8	19.7	18.7	-1.1	-3.0	-1.0	-4.1	
Canada									
Czech Republic			16.5	18.1			1.6		
Denmark*	27.7	23.8	23.5	24.1	-3.9	-0.3	0.6	0.3	
Spain*	12.2	9.9	13.7	16.3	-2.3	3.9	2.6	6.5	
Finland*	18.0	15.9	22.9	23.7	-2.1	7.0	0.8	7.8	
France*	18.9	19.3	20.3	20.4	0.4	1.0	0.1	1.1	
Germany			19.5	19.4			-0.1		
Hungary			26.8	30.0			3.2		
Ireland	31.3	32.3	26.5	23.5	1.0	-5.7	-3.0		
Italy			7.9	6.7			-1.2		
Japan	38.9	40.8	42.0	40.7	1.9	1.2	-1.3	0.0	
South Korea		13.8	21.6	23.2		7.9	1.5	9.4	
Luxembourg			4.5	8.8			4.3		
Netherlands	20.8	19.1	20.1	19.4	-1.7	1.0	-0.7		
Portugal			14.7	14.6			-0.1		
Slovenia			17.6	27.3			9.6		
Sweden*	26.4	24.1	25.0	26.7	-2.4	0.9	1.7	2.6	
United Kingdom*	24.9	23.5	22.7	19.1	-1.4	-0.8	-3.6	-4.4	
United States*	43.6	43.1	44.8	39.3	-0.6	1.7	-5.5	-3.8	
Average of 10*		23.4	24.0	23.2		0.7	-0.8	-0.2	

C. Activities auxiliary to financial intermediation									
	Levels				Changes				
	1975	1985	1995	2005	1975-1985	1985-1995	1995-2005	1985-2005	
Australia*	12.6	11.5	20.5	26.4	-1.0	9.0	5.9	14.9	
Austria*	1.3	2.9	5.3	10.3	1.6	2.3	5.1	7.4	
Belgium*	19.8	20.7	23.1	24.5	0.8	2.4	1.3	3.8	
Canada									
Czech Republic			8.9	25.3			16.4		
Denmark*	1.5	1.3	4.9	7.6	-0.3	3.7	2.7	6.3	
Spain*	7.3	7.4	16.4	24.9	0.1	9.0	8.5	17.5	
Finland*		1.6	2.1	7.9		0.5	5.8	6.3	
France*	15.3	15.5	19.2	21.0	0.2	3.7	1.9	5.6	
Germany			17.0	22.7			5.8		
Hungary			6.1	7.5			1.4		
Ireland	6.3	9.7	12.2	10.6	3.4	2.6	-1.7	0.9	
Italy			28.1	33.0			4.9		
Japan								0.0	
South Korea			8.2	11.4			3.2	3.2	
Luxembourg			13.6	20.6			7.0		
Netherlands	17.9	18.6	23.1	24.0	0.8	4.4	0.9		
Portugal			13.7	14.6			0.9		
Slovenia			17.6	9.1			-8.6		
Sweden*	5.7	6.3	8.3	16.7	0.7	2.0	8.3	10.3	
United Kingdom*	17.0	20.8	23.4	23.4	3.8	2.6	0.0	2.6	
United States*		9.8	12.8	14.4		3.0	1.6	4.6	
Average of 10*		9.8	13.6	17.7		3.8	4.1	7.9	

- **Central banking**

- **Other monetary intermediation**

Includes monetary intermediation of monetary institutions other than central banks. Included are the activities of banks, discount houses, savings banks, and also specialized institutions granting credit for house purchase that also take deposits.

- **Financial leasing**

- **Other credit granting**

Includes financial intermediation primarily concerned with making loans by institutions not involved in monetary intermediation, including the granting of consumer credit, the provision of long term finance to industry, and money lending outside the banking system. The granting of credit for house purchase by specialized institutions that do not also take deposits is included in this class.

- **Other financial intermediation n.e.c.**

Includes other financial intermediation primarily concerned with distributing funds other than by making loans. This includes investment in securities (e.g. shares, bonds, bills, unit trust units, etc.) including dealing for own account by securities dealers, investment in property where this is carried out primarily for other financial intermediaries (e.g. property unit

- **Life insurance**

This class includes life insurance (including reinsurance) and other long term insurance, with or without a substantial savings element, involving the collection and investment of funds.

- **Pension funding**

This class includes the provision of retirement incomes, including activities involving the collection and investment of funds. Exclusions: Funding and administration of compulsory social security programmes are classified in class 7530 (Compulsory social security activities).

- **Non-life insurance**

This class includes insurance (including reinsurance) of non-life business (e.g. accident, fire, health, property, motor, marine, aviation, transport, pecuniary loss and liability insurance).

- **Administration of financial markets**

Includes the operation and supervision of financial markets other than by public authorities and includes the activities of stock exchanges and other bodies that regulate or supervise the activities of financial markets including exchanges for commodity futures contracts.

- **Security dealing activities**

Includes dealing in financial markets on behalf of others (e.g. stock broking) and related activities.

- **Activities auxiliary to financial intermediation n.e.c.**

Includes all activities auxiliary to financial intermediation not classified elsewhere, including financial advisers, mortgage advisers and brokers, bureaux de change, etc.

- Exclusions: Insurance agents' and other activities closely related to insurance and pension funding are classified in "Activities auxiliary to insurance and pension funding" below. Business brokerage activities (i.e. arranging for the purchase and sale of small and medium-sized businesses, including professional practices) and patent brokerage activities (arranging for the purchase and sale of patents) are classified "Other business activities n.e.c."

- **Activities auxiliary to insurance and pension funding**

Includes activities of insurance agents, average and loss adjusters,

Notes: The table reports employment shares for subsectors within finance in different years and the changes between those years.

\* Countries included in the Average of 10 are marked with an asterisk; these countries have data on all components from 1985 onwards. The boxes adjacent to panels A to C contain information on the composition of each financial subsector. More detail is provided in the text appendix. Data: EU KLEMS.

Table A4: Descriptive Statistics and Correlations for Level and Predictive Regressions

A. Descriptive statistics in for variables in levels									
	Mean	S.D.	Min	p10	p25	p50	p75	p90	Max
Finance relative wage (t)	1.57	0.35	0.61	1.20	1.35	1.54	1.69	2.03	3.01
Finance skilled relative wage (t)	1.45	0.37	0.61	1.05	1.22	1.42	1.61	1.81	3.62
Finance relative ICT intensity (t-3)	0.12	0.14	-0.07	0.00	0.02	0.08	0.17	0.27	0.84
Domestic credit/GDP (t-3)	1.14	0.58	0.38	0.50	0.74	1.06	1.39	1.83	3.19
Non-bank domestic credit/GDP (t-3)	0.42	0.51	-0.31	0.05	0.16	0.24	0.41	1.31	2.38
Bank domestic credit/GDP (t-3)	0.72	0.28	0.21	0.40	0.48	0.68	0.91	1.08	1.63
Household bank credit/GDP (t-3)	0.36	0.19	0.06	0.11	0.22	0.33	0.49	0.62	0.84
Corporate bank credit/GDP (t-3)	0.37	0.20	0.11	0.15	0.18	0.29	0.53	0.66	0.84
Mortgage bank credit/GDP (t-3)	0.34	0.20	0.07	0.14	0.21	0.28	0.43	0.70	1.05
Non-mortgage bank credit/GDP (t-3)	0.39	0.15	0.13	0.17	0.30	0.36	0.50	0.60	0.80
Financial globalization (t-3)	0.38	0.78	-1.55	-0.66	-0.13	0.36	0.89	1.43	2.17
Financial deregulation index (t-3)	0.74	0.23	0.10	0.38	0.60	0.81	0.94	1.00	1.00
B. Descriptive statistics for variables in changes									
	Mean	S.D.	Min	p10	p25	p50	p75	p90	Max
Change in finance relative wage (t,t+3)	0.01	0.20	-1.17	-0.16	-0.04	0.03	0.09	0.17	0.79
Change in finance skilled relative wage (t,t+3)	0.02	0.19	-0.85	-0.20	-0.03	0.03	0.10	0.18	0.75
Change in finance relative ICT intensity (t-3,t)	0.03	0.04	-0.08	0.00	0.01	0.02	0.04	0.08	0.23
Change in domestic credit/GDP (t-3,t)	0.09	0.14	-0.34	-0.09	0.00	0.09	0.17	0.24	0.49
Change in financial globalization (t-3,t)	0.24	0.23	-0.73	0.00	0.11	0.24	0.35	0.53	1.01
Change in financial deregulation index (t-3,t)	0.08	0.09	-0.10	0.00	0.00	0.05	0.14	0.23	0.48

Table A4: Descriptive Statistics and Correlations for Level and Predictive Regressions---continued

## C. Correlations across variables in levels

	Finance relative ICT intensity	Domestic credit	Non-bank domestic credit/GDP	Bank domestic credit/GDP	Household bank credit/GDP	Corporate bank credit/GDP	Financial globalization	Deregulation index	International capital restrictions	Privatization	Entry barriers	Banking supervision	Directed credit /GDP	Interest rate controls
Finance relative ICT intensity	1													
Domestic credit/GDP	0.13	1												
Non-bank domestic credit/GDP	0.03	0.87	1											
Bank domestic credit/GDP	0.22	0.46	-0.04	1										
Household bank credit/GDP	0.29	0.03	-0.36	0.71	1									
Corporate bank credit/GDP	0.06	0.64	0.30	0.75	0.08	1								
Financial globalization	0.47	0.04	-0.27	0.57	0.76	0.10	1							
Deregulation index	0.38	0.28	0.08	0.43	0.59	0.07	0.76	1						
International capital restrictions	0.27	0.35	0.23	0.30	0.31	0.14	0.49	0.82	1					
Privatization	0.05	0.33	0.21	0.30	0.52	-0.01	0.39	0.63	0.49	1				
Entry barriers	0.54	0.15	-0.09	0.48	0.56	0.15	0.75	0.76	0.51	0.23	1			
Banking supervision	0.29	0.25	0.07	0.40	0.52	0.07	0.62	0.84	0.58	0.46	0.65	1		
Directed credit	0.37	0.00	-0.10	0.17	0.53	-0.20	0.61	0.78	0.56	0.53	0.65	0.57	1	
Interest rate controls	0.25	0.19	0.03	0.32	0.32	0.17	0.63	0.72	0.60	0.22	0.50	0.51	0.43	1

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

	Finance relative ICT intensity	Domestic credit	Non-bank domestic credit/GDP	Bank domestic credit/GDP	Household bank credit/GDP	Corporate bank credit/GDP	Financial globalization	Deregulation index	International capital restrictions	Privatization	Entry barriers	Banking supervision	Directed credit /GDP	Interest rate controls
Finance relative ICT intensity	1													
Domestic credit/GDP	0.08	1												
Non-bank domestic credit/GDP	-0.12	0.58	1											
Bank domestic credit/GDP	0.21	0.65	-0.25	1										
Household bank credit/GDP	0.21	0.54	-0.22	0.85	1									
Corporate bank credit/GDP	0.17	0.57	-0.20	0.87	0.49	1								
Financial globalization	0.14	0.21	-0.02	0.26	0.15	0.29	1							
Deregulation index	-0.29	0.03	0.04	0.00	-0.09	0.08	0.03	1						
International capital restrictions	-0.18	-0.05	-0.04	-0.03	-0.08	0.03	0.02	0.63	1					
Privatization	-0.03	-0.08	-0.10	0.00	0.07	-0.06	-0.01	0.28	-0.02	1				
Entry barriers	-0.17	0.05	0.05	0.01	-0.12	0.13	0.03	0.61	0.32	0.07	1			
Banking supervision	-0.15	0.00	-0.05	0.05	0.01	0.05	-0.11	0.44	0.11	0.13	0.20	1		
Directed credit	-0.11	-0.06	-0.08	0.01	-0.03	0.04	0.09	0.56	0.29	0.05	0.31	0.10	1	
Interest rate controls	-0.14	0.10	0.13	-0.01	-0.12	0.10	0.08	0.45	0.18	-0.07	0.03	-0.09	0.16	1

Notes: Statistics are computed for 356 observations for 15 countries; the range for t is 1976-2005. The sample of 15 countries is determined by ICT data availability in the EU KLEMS data; these countries are: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Sweden, and the United States. We lose Austria, Czech Republic, South Korea and Slovenia when we split bank credit due to data unavailability. Wage, skill and ICT variables are calculated based on EU KLEMS data. Domestic credit covers all forms of credit to the non-financial sector on a gross level, except for credit to the government, which is on a net basis; data from the World Bank World Development Indicators database. Bank domestic credit data are from Jorda, Schularick and Taylor (2014), except for Austria and South Korea where the data are from the World Bank World Development Indicators database. Non-bank domestic credit is total domestic credit minus bank credit. The split of bank domestic credit to households versus corporations, and to mortgage versus non-mortgage lending is given in Jorda, Schularick and Taylor (2014). Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ ; data are from Lane and Milesi-Ferretti (2007). Statistics on the financial reform indices are reported in Table 2. In Panel C correlation coefficients that are strictly greater than 0.11 are statistically significant at the 5% level; in Panel D all correlation coefficients are not statistically significant at conventional levels.

Table A5: ICT Complementarity with High Skilled Workers

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent Variable: Wage bill share of skilled workers					
	Finance	Aggregate	NFFP	Finance	Aggregate	NFFP
ln(wH/wL)	0.254*** (0.0314)	-0.0266 (0.0237)	-0.0116 (0.0241)	0.229*** (0.0252)	0.0543*** (0.0133)	0.0355** (0.0158)
ln(ICT/Q)	0.0562*** (0.00234)	0.0472*** (0.00129)	0.0465*** (0.00263)	0.0409*** (0.00291)	0.0227*** (0.00212)	0.0273*** (0.00331)
ln(NonICT/Q)	-0.0946*** (0.00901)	0.00367 (0.0224)	-0.0475*** (0.00656)	-0.0671*** (0.00628)	0.0636*** (0.0171)	0.0686*** (0.0137)
ln(Q)				0.0751*** (0.00923)	0.120*** (0.00919)	0.0898*** (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 high skilled (i.e., university graduates) 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 is smaller due to data limitations. Test statistics are obtained by pooling data series for aggregate or NFFP with finance. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Data: EU KLEMS.



Table A6: Finance Relative Wages: Robust Standard Errors versus Clustered Errors at the Country Level

	(1)	(2)	(3)	(4)	(5)	(6)
<b>A. Level regressions. Dependent Variable:</b>						
	Finance relative wages	Finance skilled relative wages				
Financial deregulation index, t-3	0.408	0.32				
<i>Robust standard errors</i>	(0.133)	(0.154)				
<i>Standard errors with country-level clustering</i>	(0.616)	(0.631)				
Finance relative ICT intensity, t-3	0.287	0.991				
<i>Robust standard errors</i>	(0.219)	(0.244)				
<i>Standard errors with country-level clustering</i>	(0.618)	(0.927)				
Financial globalization, t-3	0.257	-0.0769				
<i>Robust standard errors</i>	(0.0556)	(0.0633)				
<i>Standard errors with country-level clustering</i>	(0.0994)	(0.145)				
Domestic credit/GDP, t-3	0.265	0.528				
<i>Robust standard errors</i>	(0.0713)	(0.0797)				
<i>Standard errors with country-level clustering</i>	(0.329)	(0.424)				
Observations	356	341				
Number of countries	15	15				
R-squared, within	0.303	0.211				
<b>B. Predictive regressions. Dependent Variable: Changes from t to t+3 in</b>						
			Finance relative wages		Finance skilled relative wages	
			OLS	IV	OLS	IV
Change in financial deregulation, t-3 to t			0.393	0.971	0.452	0.876
<i>Robust standard errors</i>			(0.111)	(0.200)	(0.134)	(0.178)
<i>Standard errors with country-level clustering</i>			(0.142)	(0.318)	(0.150)	(0.302)
Change in finance relative share of ICT in capital stock, t-3 to t			-0.436	-0.0923	-0.452	-0.0404
<i>Robust standard errors</i>			(0.309)	(0.261)	(0.330)	(0.289)
<i>Standard errors with country-level clustering</i>			(0.263)	(0.311)	(0.286)	(0.300)
Change in financial globalization, t-3 to t			0.0504	0.0295	0.142	0.00844
<i>Robust standard errors</i>			(0.0441)	(0.0586)	(0.0538)	(0.00519)
<i>Standard errors with country-level clustering</i>			(0.0633)	(0.0902)	(0.0666)	(0.0119)
Change in domestic credit/GDP, t-3 to t			-0.127	-0.165	-0.161	-0.0171
<i>Robust standard errors</i>			(0.0779)	(0.0645)	(0.0825)	(0.00728)
<i>Standard errors with country-level clustering</i>			(0.0517)	(0.111)	(0.0636)	(0.106)
Observations			293	293	278	278
Number of countries			15	15	15	15
R-squared			0.201	0.341	0.144	0.387
First stage partial F-stat			-	32	-	36

Notes: All regressions include country fixed effects and year fixed effects. For the regressions in Panel A, the explanatory variables are levels lagged 3 periods. For the regressions in Panel B, the explanatory variables are the t to t+3 changes, and the right hand side variables are the lagged three-year changes (from t-3 to t) for each variable. In the IV regressions, we use the level of deregulation at t-3 as an instrument for changes in deregulation from t-3 to t. Deregulation data are from Abiad, Detragiache and Tresselt (2008). The dependent variables, as well as relative ICT use in finance, are calculated from the EU KLEMS database. Domestic credit covers all forms of credit to the non-financial sector on a gross level, except for credit to the government, which is on a net basis; data from the World Bank World Development Indicators database. Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ ; data are from Lane and Milesi-Ferretti (2007). The sample ends in 2005. The sample of 15 countries is determined by ICT data availability in the EU KLEMS data; these countries are: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Sweden, and the United States. Stated standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A7: Finance Relative Wages First Stage Regressions

Instrumented, Dependent Variable: Change in financial deregulation, t-3 to t

Instrument: Financial deregulation, t-3

	(1)	(2)
	Relative wage regression sample	Relative skilled wage regression sample
Financial deregulation, t-3	-0.363*** (0.0934)	-0.516*** (0.0851)
Change in finance relative share of ICT in capital stock, t-3 to t	-0.318* (0.189)	-0.217 (0.200)
Change in domestic credit/GDP, t-3 to t	0.0690 (0.0553)	0.0308 (0.0683)
Change in financial globalization, t-3 to t	0.0207 (0.0336)	0.0240 (0.0372)
Observations	293	278
R-squared	0.248	0.275

Notes: This table shows the results of first stage regressions corresponding to the second stage regressions reported in columns 2 and 4 of Table 5. All regressions include country and year fixed effects. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables, as well as relative ICT use in finance, are calculated from the EU KLEMS database. Domestic credit is normalized by GDP, data from the World Bank World Development Indicators database. Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ , data are from Lane and Milesi-Ferretti (2007). The sample ends in 2005. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A8: Finance Relative Wages False First Stage Regressions

Dependent Variable: Changes from t-3 to t in	(1)	(2)	(3)	(4)	(5)	(6)
	Relative wage regression sample			Relative skilled wage regression sample		
	Relative share of ICT	Domestic credit	Financial globalization	Relative share of ICT	Domestic credit	Financial globalization
Financial deregulation, t-3	0.0499 (0.0286)	0.0836 (0.204)	-0.0967 (0.171)	0.0549 (0.0332)	0.0414 (0.255)	-0.0442 (0.201)
Change in financial deregulation, t-3 to t	-0.0902*** (0.0300)	0.106 (0.105)	0.258 (0.260)	-0.0916** (0.0315)	0.0748 (0.100)	0.293 (0.279)
Change in domestic credit/GDP, t-3 to t	0.00383 (0.0387)		0.321* (0.176)	0.00163 (0.0400)		0.349* (0.189)
Change in financial globalization, t-3 to t	0.00108 (0.0206)	0.103** (0.0461)		0.00216 (0.0215)	0.113* (0.0531)	
Change in finance relative share of ICT in capital stock, t-3 to t		0.0613 (0.627)	0.0543 (1.015)		0.0255 (0.627)	0.105 (1.011)
Observations	293	293	293	278	278	278
R-squared	0.526	0.191	0.300	0.510	0.174	0.313
Number of countries	15	15	15	15	15	15

Notes: This table shows the results of "false" first stage regressions, where we pretend to instrument for variables other than three year changes in the deregulation index. Here, instead of three year changes in deregulation as the dependent variable, we use three other dependent variables: three year changes in the relative share of ICT, domestic credit, and financial globalization. In addition, we add three year changes in the deregulation index to all specifications. The first three columns are the results corresponding to column 1 in Table A7a (sample of relative finance wages), whereas the last three columns show the results using the sample as in column 2 of Table A7a (sample of relative finance skilled wage). All regressions include country and year fixed effects. Deregulation data are from Abiad, Detragiache and Tressel (2008). Relative ICT use in finance is calculated from the EU KLEMS database. Domestic credit is normalized by GDP, data from the World Bank World Development Indicators database. Bank domestic credit data are from Jorda, Schularick and Taylor (2014), except for Austria and South Korea where the data are from the World Bank Development Indicators database. Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ , data are from Lane and Milesi-Ferretti (2007). The sample ends in 2005. The sample of 15 countries is determined by ICT data availability in the EU KLEMS data; these countries are: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Sweden, and the United States. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A9: Country Interaction Terms and Correlations

A. Values										
	Non-bank domestic credit/GDP	Bank non-interest income share	Stock market capitalization/GDP	OTC turnover/Stock market turnover	OTC turnover/GDP	Global financial center indicator^	Bank Concentration	Revenue-based competition index	Profit-based competition index	Employment protection index
Australia	0.76	0.49	0.64	0.25	0.12	1	54.9	0.27	0.16	1.17
Austria	0.31	0.30	0.13	0.19	0.06	0	87.9	0.73	0.19	2.75
Canada	0.44	0.46	1.04	0.14	0.06	1	44.4	0.74	0.14	0.92
Czech Republic	0.06	0.47	0.11	0.10	0.07	0	70.9	0.67	0.11	3.31
Germany	0.34	0.36	0.22	0.06	0.06	1	68.9	0.80	0.13	2.65
Denmark	0.26	0.28	0.29	0.33	0.17	0	82.3	0.42	0.25	2.16
Finland	0.16	0.38	0.31	0.04	0.04	0	97.0	0.86	0.05	2.45
United Kingdom	0.31	0.64	1.03	0.93	0.48	1	61.8	0.59	0.13	1.03
Italy	0.34	0.37	0.15	0.03	0.02	0	53.2	0.77	0.14	2.76
Japan	1.81	0.25	0.67	0.07	0.04	1	42.5	0.50	0.18	1.70
South Korea	0.04	0.38	0.32	0.01	0.01	1	67.1	0.53	0.22	3.04
Netherlands	0.24	0.24	0.60	0.13	0.10	0	82.8	0.76	0.18	2.91
Portugal	0.18	0.36	0.14	0.03	0.04	0	52.5	0.76	0.15	4.58
Sweden	0.28	0.33	0.55	0.10	0.07	0	96.0	0.45	0.09	2.80
United States	1.33	0.39	0.79	0.04	0.04	1	20.1	0.46	0.22	0.26
Average	0.46	0.38	0.46	0.16	0.09	0.47	65.5	0.62	0.16	2.30
Std. Dev.	0.49	0.10	0.32	0.23	0.11	-	21.6	0.17	0.05	1.11
B. Standardized values (= [country value-average]/std.dev.)										
Australia	0.62	1.04	0.53	0.38	0.22	-	-0.49	-2.04	0.16	-1.02
Austria	-0.31	-0.76	-1.05	0.13	-0.25	-	1.04	0.62	0.58	0.41
Canada	-0.03	0.74	1.80	-0.10	-0.29	-	-0.98	0.70	-0.37	-1.24
Czech Republic	-0.81	0.87	-1.12	-0.28	-0.23	-	0.25	0.30	-0.88	0.91
Germany	-0.23	-0.21	-0.78	-0.45	-0.31	-	0.16	1.05	-0.53	0.32
Denmark	-0.40	-0.99	-0.55	0.70	0.68	-	0.78	-1.16	1.73	-0.13
Finland	-0.61	-0.03	-0.50	-0.53	-0.42	-	1.46	1.38	-1.98	0.14
United Kingdom	-0.30	2.53	1.77	3.34	3.39	-	-0.17	-0.21	-0.43	-1.14
Italy	-0.24	-0.13	-0.98	-0.58	-0.60	-	-0.57	0.86	-0.26	0.42
Japan	2.75	-1.25	0.63	-0.41	-0.43	-	-1.06	-0.69	0.50	-0.54
South Korea	-0.85	0.01	-0.45	-0.66	-0.74	-	0.08	-0.50	1.27	0.66
Netherlands	-0.44	-1.33	0.41	-0.14	0.05	-	0.80	0.78	0.37	0.55
Portugal	-0.56	-0.19	-1.00	-0.56	-0.45	-	-0.60	0.79	-0.11	2.05
Sweden	-0.37	-0.45	0.25	-0.29	-0.18	-	1.41	-0.97	-1.30	0.45
United States	1.78	0.13	1.03	-0.53	-0.44	-	-2.10	-0.92	1.27	-1.84

Table A9: Country Interaction Terms and Correlations---continued

C. Pearson correlation coefficients										
	Non-bank domestic credit/GDP	Bank non-interest income share	Stock market capitalization/GDP	OTC turnover/Stock market turnover	OTC turnover/GDP	Global financial center indicator <sup>^</sup>	Bank Concentration	Revenue-based competition index	Profit-based competition index	Employment protection index
Non-bank domestic credit/GDP	1.00									
Bank non-interest income share	-0.18	1.00								
Stock market capitalization/GDP	0.44	0.41	1.00							
OTC turnover/Stock market turnover	-0.09	0.6200*	0.4870*	1.00						
OTC turnover/GDP	-0.11	0.6171*	0.4859*	0.9880*	1.00					
Global financial center indicator <sup>^</sup>	0.5156*	0.41	0.6262*	0.21	0.20	1.00				
Bank Concentration	-0.6495*	-0.25	-0.42	0.06	0.06	-0.6321*	1.00			
Revenue-based competition index	-0.43	-0.10	-0.34	-0.22	-0.20	-0.36	0.23	1.00		
Profit-based competition index	0.29	-0.33	0.04	0.01	-0.03	0.23	-0.35	-0.4494*	1.00	
Employment protection index	-0.5851*	-0.38	-0.7953*	-0.39	-0.35	-0.6630*	0.4852*	0.4505*	-0.19	1.00
D. Spearman correlation coefficients										
	Non-bank domestic credit/GDP	Bank non-interest income share	Stock market capitalization/GDP	OTC turnover/Stock market turnover	OTC turnover/GDP	Global financial center indicator <sup>^</sup>	Bank Concentration	Revenue-based competition index	Profit-based competition index	Employment protection index
Non-bank domestic credit/GDP	1.00									
Bank non-interest income share	0.04	1.00								
Stock market capitalization/GDP	0.5277*	0.26	1.00							
OTC turnover/Stock market turnover	0.23	0.08	0.29	1.00						
OTC turnover/GDP	0.03	0.09	0.19	0.9066*	1.00					
Global financial center indicator <sup>^</sup>	0.5577*	0.43	0.6804*	0.05	-0.06	1.00				
Bank Concentration	-0.6154*	-0.29	-0.43	0.22	0.33	-0.6186*	1.00			
Revenue-based competition index	-0.26	-0.09	-0.36	-0.41	-0.38	-0.28	0.17	1.00		
Profit-based competition index	0.17	-0.34	0.10	0.05	-0.10	0.19	-0.31	-0.4439*	1.00	
Employment protection index	-0.7478*	-0.33	-0.7357*	-0.44	-0.22	-0.6186*	0.41	0.31	-0.14	1.00

Notes: The table reports country-level values that are used to interact with financial regulation and deregulation in regressions. The regressions use standardized values of these values, which are reported in the lower part of the table. Domestic credit covers all forms of credit to the non-financial sector on a gross level, except for credit to the government, which is on a net basis; data from the World Bank World Development Indicators database. Bank domestic credit data are from Jorda, Schularick and Taylor (2014), except for Austria and South Korea where the data are from the Bank World Development Indicators database. Non-bank domestic credit is total domestic credit minus bank credit. Bank non-interest income share is income generated by non-interest related activities as a percentage of total bank income; non-interest related income includes net gains on trading and derivatives, net gains on other securities, net fees and commissions and other operating income. OTC turnover data are from the Bank for International Settlements. The global financial center indicator takes value 1 for Australia, Canada, Germany, United Kingdom, Japan, South Korea, and the United States; data from Global Financial Centres Index, produced by the think-tank Z/Yen. Bank non-interest income share, stock market capitalization, stock market turnover, revenue-based competition index and profit-based competition index data are from the Financial Development Dataset, World Bank. The sample ends in 2005. The sample of 15 countries is determined by ICT data availability in the EU KLEMS data; these countries are: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Sweden, and the United States. <sup>^</sup> Global financial center indicator is not standardized. Robust standard errors in parentheses.

Table A10: Finance Skilled Relative Wages: Interactions with Deregulation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A. Dependent Variable: Finance skilled relative wage										
Interaction variable (standardized, except in column 6):	Non-bank domestic credit/GDP	Bank non-interest income share	Stock market capitalization/GDP	OTC turnover/Stock market turnover	OTC turnover/GDP	Global financial center indicator <sup>^</sup>	Employment protection index <sup>^^</sup>	Bank concentration	Revenue-based competition index	Profit-based competition index
Financial deregulation index, t-3 * interaction variable	-0.0135 (0.0859)	0.407*** (0.0706)	0.711*** (0.0872)	0.274*** (0.0646)	0.246*** (0.0615)	1.030*** (0.157)	-0.964*** (0.0866)	-0.0317 (0.0860)	-0.474*** (0.0568)	-0.0140 (0.0483)
Financial deregulation index, t-3	0.323 (0.211)	0.203 (0.163)	0.540*** (0.153)	0.192 (0.215)	0.244 (0.217)	-0.275* (0.164)	0.0578 (0.124)	0.327 (0.228)	-0.270* (0.152)	0.326 (0.220)
Finance relative ICT intensity, t-3	0.990*** (0.295)	1.091*** (0.274)	1.130*** (0.232)	0.999*** (0.282)	0.962*** (0.281)	1.145*** (0.277)	0.917*** (0.222)	1.035*** (0.282)	0.950*** (0.289)	0.981*** (0.316)
Financial globalization, t-3	-0.0754 (0.0718)	-0.0537 (0.0620)	-0.0391 (0.0556)	-0.0613 (0.0636)	-0.0692 (0.0647)	0.0378 (0.0711)	-0.0967* (0.0553)	-0.0789 (0.0715)	-0.0282 (0.0622)	-0.0801 (0.0707)
Domestic credit/GDP, t-3	0.539*** (0.144)	0.593*** (0.107)	0.196** (0.0804)	0.499*** (0.103)	0.504*** (0.106)	0.219*** (0.0991)	0.205** (0.0840)	0.519*** (0.131)	0.284*** (0.103)	0.532*** (0.119)
Observations	341	341	341	341	341	341	333	341	341	341
Number of countries	15	15	15	15	15	15	14	15	15	15
R-squared	0.731	0.780	0.821	0.754	0.751	0.785	0.838	0.731	0.791	0.731
B. Dependent Variable: Changes from t to t+3 in finance skilled relative wage										
Interaction variable (standardized, except in column 6):	Non-bank domestic credit/GDP	Bank non-interest income share	Stock market capitalization/GDP	OTC turnover/Stock market turnover	OTC turnover/GDP	Global financial center indicator <sup>^</sup>	Employment protection index <sup>^^</sup>	Bank concentration	Revenue-based competition index	Profit-based competition index
Change in financial deregulation, t-3 to t * interaction variable	0.249** (0.116)	0.249*** (0.0786)	0.272*** (0.0897)	0.161** (0.0735)	0.158** (0.0706)	0.278 (0.222)	-0.412*** (0.147)	0.277*** (0.103)	-0.248*** (0.0877)	-0.188* (0.103)
Change in financial deregulation, t-3 to t	0.222* (0.118)	0.185 (0.115)	0.228** (0.115)	0.169 (0.129)	0.188 (0.125)	0.0813 (0.133)	0.123 (0.117)	0.242** (0.119)	0.157 (0.107)	0.288** (0.128)
Change in finance relative share of ICT in capital stock, t-3 to t	-0.454 (0.296)	-0.496* (0.299)	-0.514* (0.292)	-0.439 (0.297)	-0.423 (0.296)	-0.535* (0.321)	-0.451 (0.280)	-0.581* (0.304)	-0.472 (0.308)	-0.335 (0.303)
Change in financial globalization, t-3 to t	0.0396 (0.0605)	0.0170 (0.0614)	0.0284 (0.0611)	0.0310 (0.0609)	0.0312 (0.0609)	0.0243 (0.0598)	0.0278 (0.0602)	0.0168 (0.0604)	0.0152 (0.0596)	0.0348 (0.0598)
Change in domestic credit/GDP, t-3 to t	-0.149** (0.0680)	-0.154** (0.0715)	-0.147** (0.0712)	-0.157** (0.0708)	-0.157** (0.0708)	-0.154** (0.0700)	-0.133* (0.0699)	-0.146** (0.0694)	-0.120* (0.0709)	-0.178** (0.0694)
Observations	278	278	278	278	278	278	274	278	278	278
Number of countries	15	15	15	15	15	15	15	15	15	14
R-squared	0.467	0.472	0.471	0.464	0.464	0.460	0.479	0.471	0.472	0.463

Notes: All regressions include country fixed effects and year fixed effects. In Panel A the explanatory variables are lagged three periods. In Panel B the explanatory variables are the three-year changes (from t-3 to t) for each variable. Deregulation data are from Abiad, Detragiache and Tresselt (2008). The dependent variables, as well as relative ICT use in finance, are calculated from the EU KLEMS database. Domestic credit covers all forms of credit to the non-financial sector on a gross level, except for credit to the government, which is on a net basis; data from the World Bank World Development Indicators database. Bank domestic credit data are from Jorda, Schularick and Taylor (2014), except for Austria and South Korea where the data are from the World Bank Development Indicators database. Non-bank domestic credit is total domestic credit minus bank credit. Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ ; data are from Lane and Milesi-Ferretti (2007). Bank non-interest income share is income generated by non-interest related activities as a percentage of total bank income; non-interest related income includes net gains on trading and derivatives, net gains on other securities, net fees and commissions and other operating income. OTC turnover data are from the Bank for International Settlements. The global financial center indicator takes value 1 for Australia, Canada, Germany, United Kingdom, Japan, South Korea, and the United States; data from Global Financial Centres Index, produced by the think-tank Z/Yen. Bank non-interest income share, Stock market capitalization, Stock market turnover, Revenue-based competition index and Profit-based competition index data are from the Financial Development Dataset, World Bank. The sample ends in 2005. The sample of 15 countries is determined by ICT data availability in the EU KLEMS data; these countries are: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Sweden, and the United States. <sup>^</sup> Global financial center indicator is not standardized. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A11: Finance Overall and Skilled Relative Wages: Interactions with Anglo-Saxon Dummy

Dependent Variable:	(1)	(2)	Changes from t to t+3	
	Finance relative wage	Finance relative skilled wage	Finance relative wage	Finance relative skilled wage
	Financial deregulation index, t-3 * interaction variable	1.095*** (0.0848)	1.419*** (0.113)	
Financial deregulation index, t-3	-0.160 (0.113)	-0.234* (0.122)		
Finance relative ICT intensity, t-3	0.578*** (0.184)	1.273*** (0.236)		
Financial globalization, t-3	0.226*** (0.0485)	-0.0655 (0.0505)		
Domestic credit/GDP, t-3	0.201*** (0.0613)	0.411*** (0.0818)		
Change in financial deregulation, t-3 to t * interaction variable			1.044*** (0.190)	0.796*** (0.208)
Change in financial deregulation, t-3 to t			-0.0311 (0.122)	-0.0702 (0.133)
Change in finance relative share of ICT in capital stock, t-3 to t			-0.585** (0.251)	-0.546* (0.284)
Change in financial globalization, t-3 to t			0.0347 (0.0584)	0.0146 (0.0609)
Change in domestic credit/GDP, t-3 to t			-0.0842 (0.0660)	-0.126* (0.0719)
Observations	356	341	293	278
Number of countries	15	15	15	15
R-squared	0.851	0.848	0.473	0.488

Notes: All regressions include country fixed effects and year fixed effects. In columns 1 and 2 the explanatory variables are lagged three periods. In the last two columns, the explanatory variables are the three-year changes (from t-3 to t) for each variable. Deregulation data are from Abiad, Detragiache and Tressel (2008). The dependent variables, as well as relative ICT use in finance, are calculated from the EU KLEMS database. Domestic credit covers all forms of credit to the non-financial sector on a gross level, except for credit to the government, which is on a net basis; data from the World Bank World Development Indicators database. Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ ; data are from Lane and Milesi-Ferretti (2007). The Anglo-Saxon dummy takes value 1 for Australia, Canada, United Kingdom, and the United States. The sample ends in 2005. The sample of 15 countries is determined by ICT data availability in the EU KLEMS data; these countries are: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Sweden, and the United States. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A12: Descriptive Statistics and Correlations for Bank Concentration Regressions

A. Descriptive statistics								
	Mean	S.D.	Min	p10	p25	p50	p75	p90
Finance relative wage (t)	1.72	0.33	1.30	1.41	1.53	1.61	1.89	2.08
Finance skilled relative wage (t)	1.47	0.23	0.98	1.16	1.19	1.50	1.64	1.76
Finance relative ICT intensity (t-3)	0.27	0.18	-0.06	0.10	0.18	0.25	0.30	0.50
Domestic credit/GDP (t-3)	1.39	0.67	0.42	0.56	1.01	1.38	1.65	2.14
Financial globalization (t-3)	1.12	0.58	0.05	0.43	0.60	1.26	1.51	2.06
Log bank concentration (t-3)	-0.41	0.39	-1.46	-1.05	-0.53	-0.33	-0.13	0.00
B. Correlations								
	Finance relative ICT intensity	Domestic credit /GDP	Non-bank domestic credit/GDP	Bank domestic credit/GDP	Household bank credit/GDP	Corporate bank credit/GDP	Financial globalization	Bank concentration
Finance relative ICT intensity	1							
Domestic credit/GDP	-0.14	1						
Non-bank domestic credit/GDP	-0.06	0.89	1					
Bank domestic credit/GDP	-0.17	0.15	-0.31	1				
Household bank credit/GDP	-0.10	-0.25	-0.55	0.69	1			
Corporate bank credit/GDP	-0.12	0.45	0.09	0.77	0.12	1		
Financial globalization	0.18	-0.49	-0.69	0.49	0.78	0.04	1	
Bank concentration	0.19	-0.61	-0.76	0.36	0.27	0.27	0.39	1

Notes: Bank concentration is the log of the share of the largest three banks; data from the World Bank. Domestic credit covers all forms of credit to the non-financial sector on a gross level, except for credit to the government, which is on a net basis; data from the World Bank Development Indicators database. Bank domestic credit data are from Jorda, Schularick and Taylor (2014), except for Austria and South Korea where the data are from the Bank World Development Indicators database. Non-bank domestic credit is total domestic credit minus bank credit. The split of bank domestic credit to households versus corporations is given in Jorda, Schularick and Taylor (2014). Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ , data are from Lane and Milesi-Ferretti (2007). Statistics are computed for 60 observations for 16 countries. The range for t is 2000-2005. The sample of 16 countries is determined by ICT data availability in the EU KLEMS data; these countries are: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Slovenia, Sweden, and the United States. All correlations above 0.3 are statistically significant.



Table A13: Bank Concentration &amp; Finance Relative Wages, 2000-2005

Dependent Variable:	(1)	(2)	(3)	(4)
	Finance relative wage		Finance skilled relative wage	
Bank concentration, t-3	0.145** (0.0535)	0.132** (0.0532)	0.199*** (0.0716)	0.194** (0.0723)
Finance relative share of ICT in capital stock, t-3		-0.488** (0.207)		-0.511* (0.281)
Financial globalization, t-3		-0.0128 (0.0701)		-0.0660 (0.0952)
Domestic credit/GDP, t-3		-0.0128 (0.0364)		-0.0462 (0.0494)
Observations	60	60	60	60
R-squared, within	0.329	0.282	0.260	0.340
Number of countries	16	16	16	16

Notes: All regressions include country and year fixed effects. The explanatory variables are lagged 3 periods. Bank concentration is the log of the share of the largest three banks; data from the World Bank. The dependent variables, as well as relative ICT use in finance, are calculated from the EU KLEMS database. Domestic credit covers all forms of credit to the non-financial sector on a gross level, except for credit to the government, which is on a net basis; data from the World Bank Development Indicators database. Financial globalization is  $\log((\text{foreign assets} + \text{liabilities})/\text{GDP})$ , data are from Lane and Milesi-Ferretti (2007). The sample is from 1997 (start of the bank concentration data) to 2005. These regressions include 16 countries (15 countries in our main regressions plus Slovenia for which deregulation data was not available). The sample of 16 countries is: Australia, Austria, Canada, Czech Republic, Germany, Denmark, Finland, United Kingdom, Italy, Japan, South Korea, Netherlands, Portugal, Slovenia, Sweden, and United States. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A14: Summary Statistics for Migration Regressions

	Mean	S.D.	Min	Median	Max
<b>A. Migration stocks</b>					
Log of high skilled finance immigration stock	4.15	2.32	0.0	4.09	9.62
Log of low skilled finance immigration stock	4.12	2.32	0.0	4.01	10.53
High skilled immigrants in finance as a percentage of all high skilled immigrants	6.47	6.99	0.75	4.30	46.26
Low skilled immigrants in finance as a percentage of all low skilled immigrants	5.05	7.26	0.26	2.58	43.33
Ratio of high to low skilled immigrants in finance	1.46	1.24	0.05	1.06	6.50
<b>B. Wages</b>					
Log of high skilled finance wage	4.39	0.23	3.97	4.41	4.84
Log of low skilled finance wage	3.95	0.29	3.03	3.97	4.36
Log of high skilled NFFP wage	4.06	0.19	3.53	4.10	4.32
Log of low skilled NFFP wage	3.47	0.25	2.59	3.54	3.71
Ratio of high to low skilled wages in finance	1.62	0.35	1.07	1.62	2.55
Ratio of high to low skilled wages in NFFP	1.88	0.53	1.29	1.84	3.66

Notes: 193 observations. Immigration stocks and wages in 2000. High skilled is defined as four-year college or university degree or greater, and low skilled as less than that. NFFP is the non-farm, non-finance private sector. Immigration data source for Panel A: OECD. Wage data source for Panel B: EU KLEMS.

Table A15: Finance Immigration Data Availability

## A. High skilled immigrants

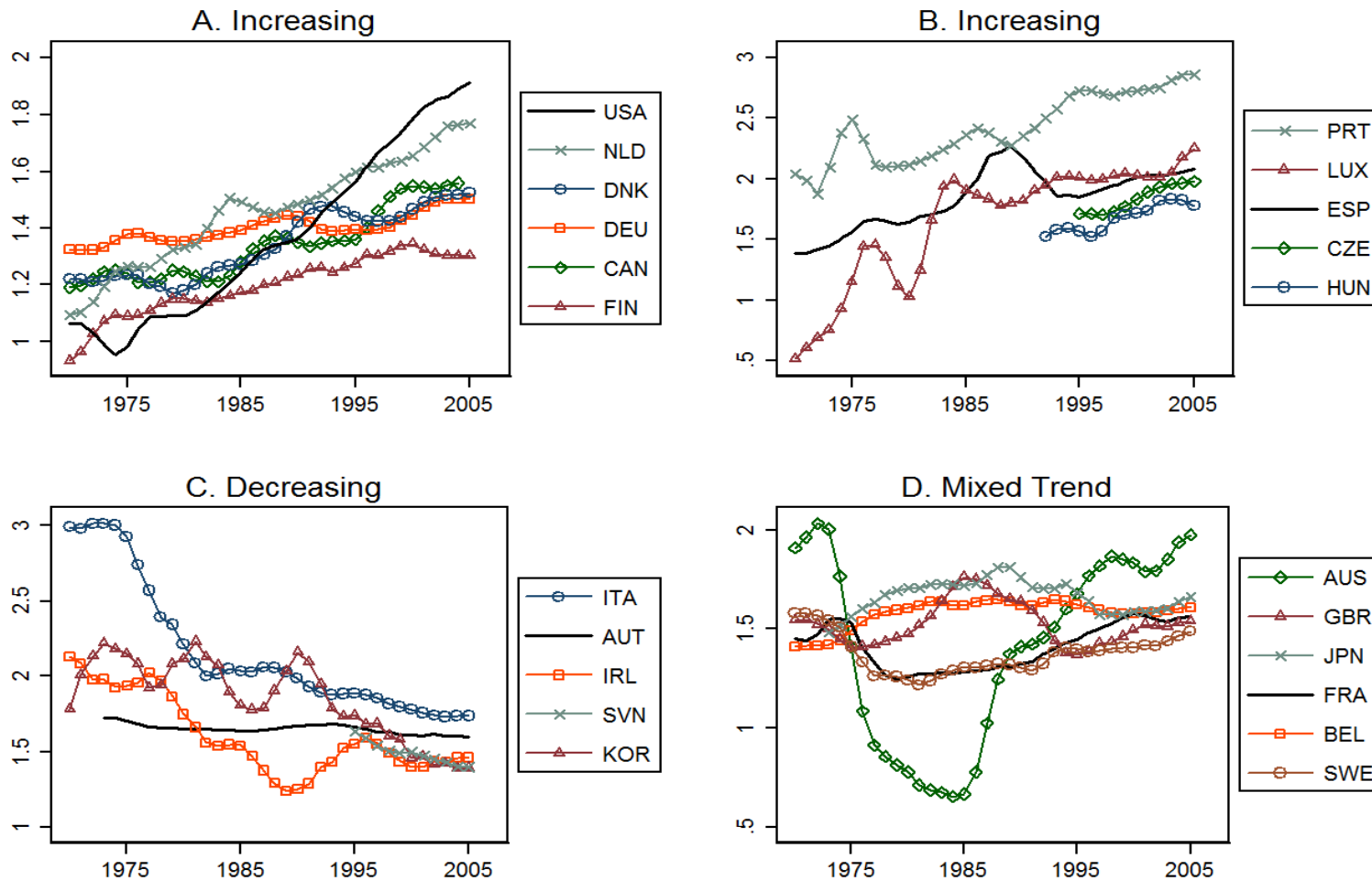
Destination	Origin									Total
	AUS	AUT	DNK	FIN	HUN	IRL	ITA	LUX	PRT	
AUS	0	0	0	0	0	0	0	1	0	1
DNK	0	0	0	0	0	0	0	1	0	1
ESP	1	0	0	1	1	0	0	1	0	4
FIN	0	0	0	0	1	0	1	1	1	4
HUN	0	0	1	1	0	1	0	1	1	5
PRT	0	1	0	0	1	0	0	0	0	2
Total	1	1	1	2	3	1	1	5	2	17

## B. Low skilled immigrants

Destination	Origin									Total
	AUS	AUT	DNK	ESP	FIN	HUN	IRL	LUX	SWE	
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 available (value of 1) and missing (value of 0) 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.

Figure A1: Finance Relative Wages---"Engaged Workers" (not "Employed" as in main text)



Notes: Finance relative wage is the average wage in finance divided by the average wage in the non-farm, non-finance private sector. Average wages are computed by dividing ENGAGED WORKER compensation by hours worked, in contrast to "employed workers" as in the main text. Data: EU KLEMS until 2005; STAN from 2006 onwards. Norway series uses only STAN data. See complete details in text. Series are three-year moving averages. Panels A and B group countries that exhibit an increasing trend. Panel C groups countries that exhibit a decreasing trend, and Panel D groups countries that exhibit a mixed trend.