

Finance and Welfare States in Globalising Markets

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Abstract

It is theoretically clear and may be verified empirically that efficient financial markets can make it less necessary for policy to try to offset the welfare effects of labour income risk. The literature has also pointed out that, since international competition exposes workers to new sources of risk at the same time as it makes it easier for individuals to undermine collective policies, international economic integration makes insurance-oriented government policies more beneficial as well as more difficult to implement. This paper reviews the economic mechanisms underlying these insights and assesses their empirical relevance in cross-country panel data sets. Interactions between indicators of international economic integration, government economic involvement and financial development are consistent with the idea that financial market development can substitute for public schemes when economic integration calls for more effective ways to smooth household consumption. The paper's theoretical perspective and empirical evidence suggest that to the extent that governments can foster financial market development by appropriate regulation and supervision, they should do so more urgently at times of intense and increasing internationalisation of economic relationships.

1. Introduction

Regulatory and tax-transfer policies play an important role, alongside financial market access, in smoothing income and consumption and protecting households from labour market and other risks such as family breakdown and ill-health. The configuration of policies and markets differs across countries, and interacts with changing economic circumstances. New types of income risk became relevant when industrialisation led to increased specialisation, and urbanisation made it necessary to replace family and village-level safety nets with trading in financial markets or with collective welfare schemes. The evolution of markets and institutions was shaped by political and social factors in each country, which featured, and still feature, different combinations of public and private risk-sharing frameworks.

When and where collective institutions play a predominant role – in the form of education and pension schemes, progressive taxation, unemployment and employment

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protection schemes – it is not necessary for households to access markets in order to finance human capital accumulation, fund retirement, and smooth out labour income fluctuations. Conversely, in economic systems where access to efficient financial markets makes it possible for households to manage income risk with private instruments, there is less need for economic policies to reduce the intensity and frequency of labour income shocks or to buffer their implications for household consumption. Differences across countries in these respects interact importantly with ongoing changes in the nature of risk and in the relative efficiency of private and public institutions. In the post-War period, new risks have arisen from deeper international economic integration and the related process of de-industrialisation in advanced countries (Rodrik 1998; Iversen and Cusack 2000). Social protection schemes based on youth education and lifelong employment lose some of their ability to stabilise labour income in times of heightened international competition and intense structural change.

This paper focuses on interactions between the internationalisation of markets, national public redistribution schemes and private financial market development. As pointed out by Rodrik (1998), Agell (2002) and others, the risks related to international trade and specialisation may encourage governments in more open economies to introduce more redistributive policies. If the relevant risks can be covered by financial market instruments, however, more intense international competition need not be accompanied by larger government budgets and more intense redistribution. And while economic integration may well increase demand for redistribution in countries where financial markets are a poor substitute for government policies, international tax competition also makes it difficult to implement collective redistribution policies.

Section 2 outlines theoretical interactions between sources of risk and different risk-sharing frameworks. Private markets are generally unable to provide insurance against labour income risks and, to the extent that governments cannot provide costlessly the same insurance that markets fail to provide, redistribution policies need to trade off consumption stability and production efficiency. The shape of the relevant trade-off depends on structural factors. Among these, the scope of international economic interactions affects both the incidence of market-driven income risk and the power of governments to enforce collective schemes in the face of international systems competition. Section 3 brings the resulting perspective to bear on differences and changes in cross-country and time-series country data on international openness, governments' economic involvement and financial development. The interaction between these features is consistent with the idea that a suitable financial infrastructure is a key determinant of a country's willingness to open its economy to international market influences, and forego some public policies that have the ability to shape citizens' incomes and consumption. The concluding Section 4 discusses implications for policy and for further research.

2. Risk, Markets and Redistribution

Economists are justifiably fond of complete, competitive markets as a useful reference paradigm. When realisations of risk have different implications for different individuals and (because of risk aversion) fluctuations in consumption around a given path decrease welfare, it would be efficient to arrange for resources to be transferred from lucky to unlucky individuals *ex ante* so as to ensure that *ex post* (after the realisation of risk) marginal utility varies across individuals in predetermined ways.² But economists are also keenly aware that, in reality, smoothing consumption in the face of shocks to income is very difficult across individuals and over time for a given individual.

2.1 Incentives and information

Implementation of the ‘contingent transfers’ that would efficiently redistribute risky income faces major information and enforcement hurdles, especially in the case of the most important and least insurable risk for households – namely that of seeing their labour income disappear, temporarily or permanently, when product markets turn against their occupation or profession. Differences in labour income across industries and regions for similar workers, and for differently skilled workers within each region and industry, are at least partly explained by the fact that mobility towards higher-paying jobs, across occupations and geographic locations, is costly. Since labour mobility cannot arbitrage away job-specific wage differentials, higher volatility of labour demand will then imply wage differentials that are not only more volatile, but also more widely distributed at a point in time because temporary wage differentials need to be larger when they are less permanent to motivate mobility (Bertola and Ichino 1995; Ljungqvist and Sargent 1998). Wider and more volatile wage differentials have important welfare implications when individual workers cannot rely on private financial instruments or collective schemes in order to finance their mobility towards higher-paying jobs. When labour demand variability needs to be absorbed by individual resources, rather than aggregate ones, trends and fluctuations in labour demand will be primarily reflected in the level and volatility of workers’ consumption. Not surprisingly, in fact, earnings and consumption data track each other quite closely at the individual level, especially at the low end of their distributions (Attanasio and Davis 1996; Blundell and Preston 1998).

Much as it would be desirable for households to obtain insurance against job loss, private markets cannot supply it as easily as insurance against earthquakes. Job loss, like many health problems and other life events, can result from the individual’s own behaviour as well as from objective circumstances. To the extent that the former cannot be observed and the latter are hard to verify, an insurance contract specifying the circumstances where a worker would be entitled to compensation when fired would be exceedingly complex to write, and essentially impossible to enforce privately. Workers covered by private insurance contracts would not work

2. See Bertola, Foellmi and Zweimüller (2006, Ch 8) for an exposition of this perspective, and of its limitations.

as hard and would be fired so much more promptly than uninsured workers as to make insurance either unprofitable for the issuer, or so inefficient as to be too costly for purchasers.

Governments have obvious enforcement advantages (and indeed supply legal and contract enforcement services to facilitate market interactions) and may exploit better information about individual circumstances and interactions across agents. When market interactions cannot exploit sufficiently broad and reliable information, taxation of lucky individuals and transfers to unlucky ones can potentially fulfil the same need for insurance as missing financial contracts. If it does succeed in serving the same purpose that markets would pursue, redistribution need not decrease productive efficiency, and may well increase it if it encourages risk-taking behaviour. For example, unemployment subsidies can allow workers to prolong their search for jobs and improve the productivity of the job they will eventually accept (Acemoglu and Shimer 1999). Labour market institutions and regulation can perform much the same role as explicit taxation and transfer payments, and may be more easily administered in some countries. For example, employment protection legislation can substitute for unemployment insurance schemes and may trigger retraining or severance payments that private markets would not be able to fund or enforce (Bertola 2004).

But policies would only be able to maximise welfare in much the same unrealistic circumstances of perfect information and enforcement that would support perfect and complete markets for contingent transfers. Like real-life markets, real-life policies also face serious problems in their attempts to buffer income shocks.

On the one hand, if political processes are charged with implementing redistribution, they may do so not for *ex post* insurance purposes but on an *ex ante* basis, in favour of politically strong groups. *Ex ante* redistribution may be grounded in shared feelings of solidarity, but is also influenced by political power and rent-seeking, so it is generally not equally supported by all individuals. Conversely, the expectation that shocks disturbing mean income will be offset by policy improves welfare for all risk-averse individuals, regardless of their mean income. In practice, it is not easy to disentangle the two sets of policy motivations and effects, which are pursued by a single set of imperfect policy instruments. Implementation of *ex ante* redistribution cannot rely on lump-sum instruments, and that of *ex post* redistribution cannot be based on realisations of exogenous risk: both have to be defined in terms of observed income, which depends on exogenous circumstances as well as on individual effort.

On the other hand, just as information problems can prevent financial markets from providing insurance, they can also imply that policies will reduce aggregate production at the same time as they share it. As the State does not know all, its policies suffer the same incentive effects that prevent private companies from offering insurance against bad luck in the labour market. For example, workers will not work as hard to avoid job loss and to find new jobs when they are insured against unemployment. Also, making it difficult for employers to fire redundant workers

stabilises workers' labour income, but it also slows down labour reallocation towards more productive jobs, thus reducing production and profitability.

The configuration of redistribution-motivated institutions is different across countries, in ways that largely reflect the historical development of nation-states. In European countries, legislation meant to endow workers with some bargaining power and to insure them against poor health, unemployment and old-age was introduced at times of actual or feared social unrest, in Bismarck's industrialising Germany or in Lord Beveridge's post-War United Kingdom. The institutional structure of labour markets and welfare schemes is distinctively different not only across the US, Japan and Europe as a whole, but also across countries within Europe, where labour market policies play different roles in different welfare-state models (Bertola *et al* 2001). Scandinavian countries offer universal welfare benefits and feature a very important role for active labour market policies (including job creation in the public sector). In comparison, the Bismarckian model of continental European countries such as France and Germany is firmly rooted in labour market regulation, with centralised wage determination and stringent employment protection legislation, and an important role for mandatory pension, health and unemployment insurance programs administered by government entities.

The Beveridgian model of the UK features comparatively light regulation of wage determination and employment relationships and general entitlement to safety-net benefits financed by general taxation, rather than insurance pay-outs financed by contributions. In the Anglo-Saxon welfare states, collectively administered schemes do not address insurance needs. This leaves room for development of private financial markets which, as pointed out by Bertola and Koeniger (2007), can make it less necessary to rely on government redistribution in order to smooth consumption in the face of individual shocks. Some of the relevant cross-country heterogeneity is related to the effectiveness of their legal and administrative frameworks in supporting markets and administrations. A large and influential, if controversial, body of work views market development and regulatory interferences as determined by countries' 'legal traditions', as defined and measured by La Porta *et al* (1998). While the flexible common law system of Anglo-Saxon countries appears more suited to support contractual relationships, the code-based systems of continental European and other countries influenced by the French legal tradition seem to stifle development of private markets at the same time as perhaps fostering relatively efficient bureaucratic administration of government schemes.

2.2 International risk and policy competition

Over time, the breadth and intensity of international economic interactions has tended to increase, driven by improvements of transportation and communication technologies, and to improve the overall efficiency of production patterns. However, the speed of economic integration differs across countries and periods because policy and politics have to deal with its implications for within-country income distribution and for the feasibility of redistribution.

In theory, deeper international integration may or may not influence the volatility of relative demand across jobs (industries, regions and occupations). More intense product market competition increases the responsiveness of labour demand to labour costs, and shocks have sharper wage and employment implications when employers enjoy access to wider international substitution possibilities. Shocks also occur within closed economies, however, and while barriers to international economic interactions protect domestic producers from foreign shocks, they also clog channels of adjustment to local shocks. Income fluctuations need not be larger in a closed economy than those occurring in an economy open to the influence of foreign shocks that are imperfectly or negatively correlated with those that originate in the domestic economy.

The relationship between economic integration and labour income risk is therefore an empirical issue. On the basis of observable outcomes, it is not easy to assess whether integration increases labour income instability (see OECD 2007) as it occurs simultaneously with other relevant phenomena, and is not exogenous. However, interesting relationships can be detected between trade exposure and labour income volatility in micro data (Krebs, Krishna and Maloney 2005). There is also even clearer survey evidence that individuals do perceive international economic integration as a risk, as their attitudes towards it are related to their personal and economic characteristics in theoretically sensible ways (see Mayda, O'Rourke and Sinnott 2007). For example, workers with low skills more strongly oppose immigration than workers with high skills in countries where immigrants are less skilled than residents.

More interestingly for this paper's purpose, there is evidence of significant interactions between the generosity of welfare-state provisions and attitudes towards immigration. In advanced countries with more generous welfare schemes, highly skilled individuals are less favourable to immigration, quite possibly because, as relatively high-income taxpayers, they feel that inflows of relatively poor individuals will increase welfare-system financing needs. As to the relationship between economic integration and labour income risk, more intense foreign direct investment (FDI) activity is associated with satisfaction or dissatisfaction with the respondent's present job security in the British worker survey analysed by Scheve and Slaughter (2004). They find that variation of indicators of FDI activity over time within a sector, controlling for the aggregate cycle, has an effect on perceptions of job security that is statistically very significant and roughly twice as strong as that of worker unionisation, education and income.

If more labour income risk is generated as labour and product markets widen across national borders, and financial markets remain unable to smooth that risk's implications for individual consumption, more intense international trade should be associated with more pervasive regulation and redistribution (Rodrik 1998). But while international economic integration increases the desirability of redistribution, it also makes it more difficult to implement. National tax policies face more elastic tax bases when potential taxpayers can move income between countries, rather than just reduce labour supply, and national subsidy policies are more expensive when they attract recipients from other constituencies. Similarly, labour market

institutions lose some of their power to shape labour incomes as markets become more powerful, collective bargaining is undermined by employers' better outside options, and the negative productivity impact of employment protection has more pronounced effects on internationally mobile investments.

When factors can be substituted in production across countries' borders, and prices and costs have stronger effects in more competitive markets, then not only product market shocks have stronger effects on wages or employment, but also policies interfering with *laissez-faire* labour market outcomes elicit stronger market reactions. International competition in product and labour markets and cross-border tax arbitrage make it more important and easier for private agents to avoid the cost implications of taxation. If market interactions across the borders of policy-making entities can work around policy constraints, uncoordinated policy interventions cannot effectively bind individual options, and regulatory competition across countries' borders threatens the effectiveness of policies that need to rely on compulsory rules based on collective rather than individual choices.

Policies are weakened when international economic relationships offer opportunities to opt in and out of redistributive schemes. But as long as policy addresses economic and political problems left unsolved by imperfect markets interactions, then barriers to economic interactions across the boundaries of political constituencies are natural elements of policy intervention packages. Just as economic integration creates new sources of opportunity and risk for producers and households (and more open countries have historically tended to have somewhat larger government budgets), it also makes it more costly or impossible for collective schemes to provide effective protection against those risks.

Thus, international economic integration affects both the demand and supply of social protection by national policy frameworks (Agell 2002). Which is the stronger effect depends on a variety of factors that may differ across countries. Among these, it is interesting to consider those that also influence the accessibility and efficiency of household financial instruments.

3. Openness, Government and Finance in Country Panel Data

Social policy should play a smaller role when and where weaker safety nets are needed. This may be because: financial markets can play much the same role; implementation is difficult; or international competitiveness considerations make it costly. This perspective can offer a useful interpretation of the differences across countries and over time of social policy, international economic integration, and financial development. To the extent that financial markets allow individuals to pool and offset risk, they reduce the negative welfare implications of income uncertainty. Thus, better financial markets can be expected to be associated with less support for tax-transfer policies meant to decouple disposable income from market outcomes, and for policies meant to interfere with market outcomes so as to reduce the extent and frequency of shocks to labour income.

The relevant relationships between these aspects and the underlying structural and political factors are intricate, and the limitations of available data make it impossible to specify and estimate structural parameters and causal relationships. The evidence can at best provide a descriptive picture of interactions between three relevant dimensions – risk, redistribution and financial development – that are poorly measured and jointly endogenous to underlying, largely unobservable country-specific and time-varying factors.

The extent and character of the observed redistribution, as discussed above, reflects administrative efficiency, political tensions and decision processes, as well as the desire to offset the *ex post* consumption fluctuations induced by uninsurable shocks stemming from international competition and other determinants of individual income. International economic integration is driven by technological improvements that make it increasingly less costly to ship goods and transmit information across countries, but also by policy choices regarding trade and factor-movement liberalisation, which may in turn aim at relieving international market pressures on redistribution systems and other policies meant to correct market failures.

As for measurement, the ratio of imports plus exports to GDP (or ‘openness’) may – as in earlier contributions – serve as a proxy for individual-specific risk. But it is far from trivial to define and measure financial markets’ completeness and efficiency on a comprehensive basis. One would ideally want to use information about the dynamics of marginal utilities (or consumption) across individuals within potentially integrated economies, but no suitable internationally comparable data are available. Some limited information is available regarding the magnitude and changes of overall income or consumption inequality across countries and over time, but the theoretical link between such statistics and financial markets is tenuous. Theoretical considerations (see Bertola *et al* 2006) and what little empirical evidence can be gathered from available data (see Clarke, Xu and Zou 2003; Bonfiglioli 2005) suggest that financial market development is not monotonically related to inequality outside the unrealistic extreme case of perfect and complete markets. Liquidity constraints and decreasing returns to investment lead to income convergence, while borrowing and lending opportunities foster divergence across individuals as uninsurable permanent-income shocks lead to equally permanent changes in assets. In addition, access to loans and stocks can imply wider *ex post* income differences across investors by making it easier to undertake risky investments.

To assess interactions between openness, redistribution and financial markets’ structure and development, it can be instructive to consider simple regressions with government policies as the left-hand side variable. The explanatory variables include not only openness, as in Rodrik (1998), but also financial market variables. The most relevant features of financial markets are those that allow individuals to smooth consumption over time in the face of both expected income dynamics and unexpected shocks, such as consumer credit facilities and stock market access. While these differ markedly across countries and over time (see Bertola, Disney and Grant 2006; Guiso, Haliassos and Jappelli 2003), comparable data on the most relevant aspects are too scarce for the purpose of even descriptive statistical analysis. Accordingly, the regressions below exploit broader, but more readily available

indicators of credit market development as relevant and observable proxies for the phenomena of interest.

3.1 Cross-country patterns

To inspect the influence of openness and financial development on government interference with market-determined income distribution, consider first the cross-sectional regressions in Tables 1–3. The first two columns of Table 1 reproduce Rodrik's (1998) basic result for the large Penn World Table sample of countries, on a 1985–2003 average basis; in countries where imports and exports are a larger share of GDP, the government's share of GDP is also larger.³ This remains true when controlling for population (insignificantly positive) and for real GDP per capita (GDPpc), which after accounting for openness shows a negative partial correlation with the government's share of GDP.

Consider next the patterns of co-variation between these variables and indicators of financial development. A variable measuring credit extended by deposit-taking banks is more widely available than broader and perhaps more appropriate measures of total private credit; available data do not include narrower household-oriented credit measures. For 135 of the 184 Penn World Table countries, at least partial data are available during the period from 1985 to 2003 for a measure of credit (the log of the ratio of credit to GDP – see the Appendix for data definitions and sources). In column (3) of Table 1, column (2)'s regression results for this restricted sample suggest an even stronger relationship between openness and government consumption. Column (4) shows that credit is positively related to openness (after controlling for population and real GDP per capita, both of which also have positive and significant coefficients).

Columns (5) and (6) include the credit variable in the regression relating government consumption and openness. In the linear specification (5), credit has no impact on government expenditure, and leaves the other coefficients unchanged. But when credit is entered both linearly and as a term interacted with openness, the coefficients are more significant and the interaction is negative. This is qualitatively consistent with the idea, discussed in Section 2, that financial markets can substitute for government schemes in addressing workers' need for insurance in the face of labour income risk. In these data, government expenditure is more positively affected by openness in countries that (after controlling for size and income) display relatively small volumes of credit.

All else equal, the volume of credit should be lower when structural factors make it difficult to access financial markets. But the volume transacted on the credit market, as on any other market, depends on demand factors as well as on such supply factors. To the extent that credit reflects the degree of heterogeneity across individuals' income histories (Iacoviello 2006), and income shocks depend on

3. The regressions, as in Rodrik, are specified in logarithmic terms. Other functional forms do not alter the signs and significance of coefficients in this and all other tables, but tend to yield worse overall fit.

Table 1: Cross-country Relationship between Openness, Credit, and Government Consumption Share of GDP – Worldwide Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Government	Government	Government	Credit	Government	Government	Government	Government	Government ^(a)
Openness	0.1882 3.19	0.2384 3.91	0.2761 4.35	0.3703 2.91	0.2779 4.46	0.2097 2.58	0.2741 4.28	0.3877 3.08	0.3963 3.38
Population		0.0002 1.28	0.0004 1.11	0.0016 2.78	0.0004 1.12	0.0004 0.94	0.0004 2.10	0.0003 1.88	0.0009 2.04
GDPpc		-0.0160 -4.96	-0.0106 -2.99	0.0922 14.41	-0.0101 -1.90	-0.0107 -2.01	-0.0098 -2.35	-0.0113 -2.63	0.0187 0.91
Credit					-0.0048 -0.10	0.2180 0.92			-0.3173 -1.41
Openness*Credit						-0.0531 -0.95			
CredInfo							-0.0268 -1.67	0.1397 1.17	
Openness*CredInfo								-0.0385 -1.42	
No	184	184	135	135	135	135	152	152	127
R ²	0.0616	0.1462	0.1481	0.5652	0.1482	0.1531	0.1690	0.1793	

Notes: Observations are averages over periods between 1985 and 2003 where data are available for each country; before computing the average, occasionally missing data are interpolated (the results are virtually identical when only available data are averaged). All regressions include a constant term. Robust *t*-statistics are reported below the coefficients. Sample: all countries, except those where openness exceeds 200 per cent (Hong Kong and Singapore) and countries where data are missing.

(a) Credit is instrumented with CredInfo.

openness because trade and specialisation imply greater risks for producers within each country, credit will be determined jointly with openness. To try to disentangle supply factors from these and other demand factors (such as those related to features of the welfare state and the labour market), the last three regressions in Table 1 exploit a credit information index (CredInfo – see the Appendix for details). Along with the enforcement of property rights, information is a key element of financial market infrastructure (Jappelli and Pagano 2006) and allows markets to manage income risk with private contracts rather than government instruments. It is interesting to find that in column (7) the coefficient on CredInfo is indeed negative and more significant than that of credit. In column (8), the coefficient estimates for CredInfo and its interaction term are again consistent with substitutability of financial market improvements and larger governments in the face of deeper internationalisation. In column (9) when credit information is used as an instrument for the volume of credit the coefficient on credit is more negative and more significant than in column (5), where credit was completely irrelevant.⁴

The government expenditure share is available for a very wide sample of countries, but is of course a poor measure of efforts to stabilise income and smooth consumption, which may become more important in more open economies and be addressed instead by financial market development. For OECD countries, arguably better indicators are available for both public management of risk (detailed spending categories from the OECD Social Expenditure Database) and the efficiency of financial markets (proxied by lending-borrowing interest margins and indicators of borrowing limits on housing purchases – that is, maximum loan-to-valuation (LTV) ratios).⁵

Before running regressions similar to those of Table 1 with these alternative indicators, it is useful to check whether and how the results of Table 1's specifications change for the restricted OECD sample. Table 2 shows that across OECD countries, as in the Rodrik (1998) sample, there is very little evidence of a relationship between openness and government size. The bi-variate correlation is sizable and significant in column (1), but is already insignificant when population and GDP per capita are controlled for in column (2). It all but vanishes when credit – which is highly correlated with GDP per capita in column (3) – and credit interacted with openness are included in column (5). As in Table 1, the negative sign of the coefficient on the interaction variable and of the large and imprecisely estimated IV coefficient in column (6) are qualitatively consistent with the notion that better-developed financial markets reduce the effect of increased openness on the size of government.

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4. An instrument is used in this way as an attempt to isolate supply-side determinants of credit from demand-side ones that also influence government expenditure.
 5. Public social expenditure and interest rate margins are available for 27 countries (Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States). Information on LTV ratios is not available for six of these countries (Czech Republic, Iceland, Mexico, Poland, South Korea and Switzerland); only one observation of the LTV ratio is available for Turkey.

Table 2: Cross-country Relationship between Openness, Credit, and Government Consumption Share of GDP – OECD Sample

	(1)	(2)	(3)	(4)	(5)	(6)
	Government	Government	Credit	Government	Government	Government ^(a)
Openness	0.2514 2.40	0.1633 1.15	-0.0411 -0.20	0.1665 1.15	0.0586 0.37	0.1132 0.37
Population		-0.0009 -0.99	-0.0001 -0.06	-0.0009 -0.95	-0.0021 -2.38	-0.0010 -0.59
GDPpc		-0.0086 -0.94	0.0856 9.93	-0.0153 -1.11	-0.0147 -1.08	0.0956 0.85
Credit				0.0778 0.58	2.0196 2.99	-1.2190 -0.93
Openness*Credit					-0.4846 -2.71	
No	27	27	27	27	27	27
R ²	0.1734	0.2366	0.7854	0.2430	0.3995	

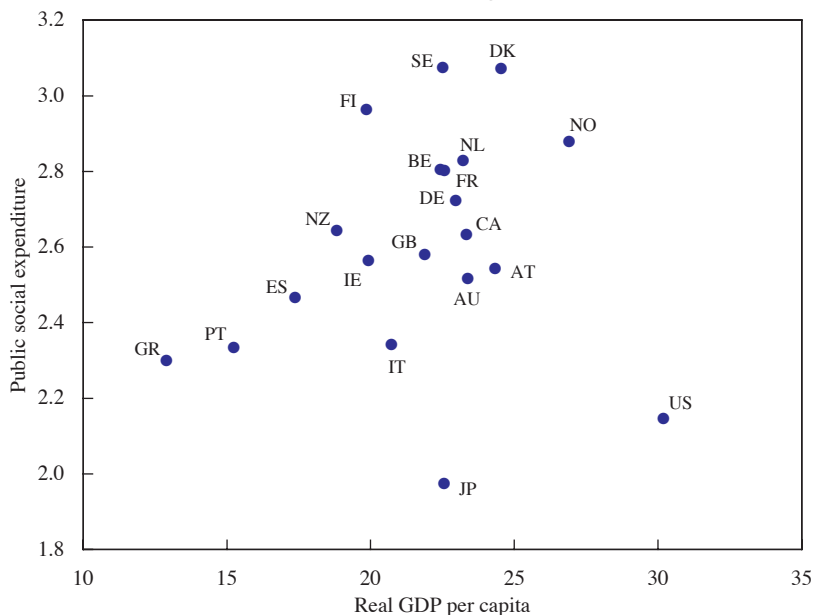
Notes: Observations are averages over periods between 1985 and 2003 where data are available for each country; before computing the average, occasionally missing data are interpolated (the results are virtually identical when only available data are averaged). All regressions include a constant term. Robust *t*-statistics are reported below the coefficients. Sample: OECD countries included in the OECD Social Expenditure Database.

(a) Credit is instrumented with CredInfo.

The smaller and familiar sample of OECD countries also makes it possible to assess informally the patterns of variation in the relevant data. Figures 1–3 display scatter plots for core OECD countries where more than one observation of LTV ratios are available.⁶ In Table 3, where the dependent variable is a measure of public social expenditure (see the Appendix for details), the first four columns deliver a message similar to that of the corresponding columns of Table 2. Openness is not strongly related to public social expenditure after controlling for country size and income. As shown in Figure 1, there is a clear positive relationship between GDP per capita and public social expenditure (as a share of GDP). Since relatively large countries (such as Japan and the United States) are outliers for this relationship, while small Scandinavian countries spend even more than their income would predict, population enters with a negative sign in column (2) of Table 3. The strength of the bi-variate relationship between openness and public social expenditure, shown in Figure 2 and column (1) of Table 3, is halved when income levels and population are included.

The positive correlation between income levels and social spending ratios should not necessarily be read as a causal relationship running from the latter to the former. It is possible for taxes and transfers to perform efficiency-enhancing roles beyond the

Figure 1: Income Levels and Social Spending in OECD Countries
1990–2003 averages



Notes: Public social expenditure is expressed as a logarithm of its share of GDP. Real GDP per capita is expressed in US\$'000. See the Appendix for more details. See Glossary for a listing of country codes.

Sources: OECD; Penn World Table Version 6.2; author's calculations

6. The regressions in Table 1 and columns (1–4) of Table 2 include other OECD countries as well. Statistical significance is affected by inclusion of those observations but the sign and size is similar for the smaller and more easily plotted sample shown in the figures.

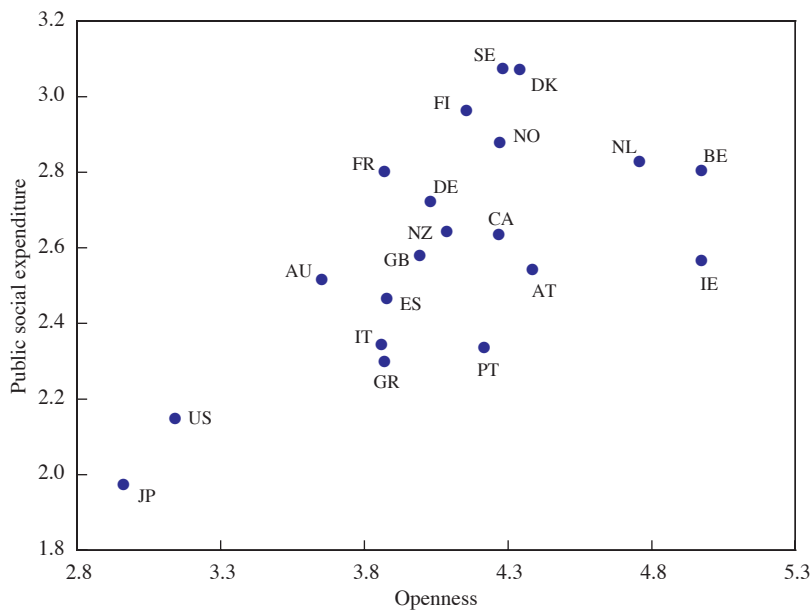
Table 3: Cross-country Relationship between Openness, Intermediation Margins, and Public Social Expenditure – OECD Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp. ^(a)	Pub.Soc.Exp.	Pub.Soc.Exp.
Openness	0.3794 4.41	0.1523 1.54	0.1504 1.42	-0.0509 -0.32	0.2105 0.74	0.1282 1.02	1.0754 0.64
Population		-0.0031 -2.88	-0.0029 -2.31	-0.0024 -1.84	-0.0080 -1.63	-0.0033 -4.27	-0.0034 -4.28
GDPpc		0.0370 3.11	0.0338 2.10	0.0370 2.28	0.1367 1.59	0.0441 5.49	0.0410 5.06
Int.Margin		-1.2738 -0.47	-1.2738 -0.47	-39.9544 -2.10	39.4884 1.16		
Openness*Int.Margin				9.9738 2.03			
LTV						0.0034 1.19	0.0470 0.64
Openness*LTV							-0.0109 -0.58
No	27	27	27	27	27	21	21
R ²	0.1992	0.6049	0.6074	0.6251		0.7606	0.7645

Notes: Observations are averages over periods between 1985 and 2003 where data are available for each country; before computing the average, occasionally missing data are interpolated (the results are virtually identical when only available data are averaged). All regressions include a constant term. Robust *t*-statistics are reported below the coefficients. Sample: OECD countries included in the OECD Social Expenditure Database.

(a) Int.Margin is instrumented with CredInfo.

Figure 2: Openness and Social Spending in OECD Countries
1990–2003 averages



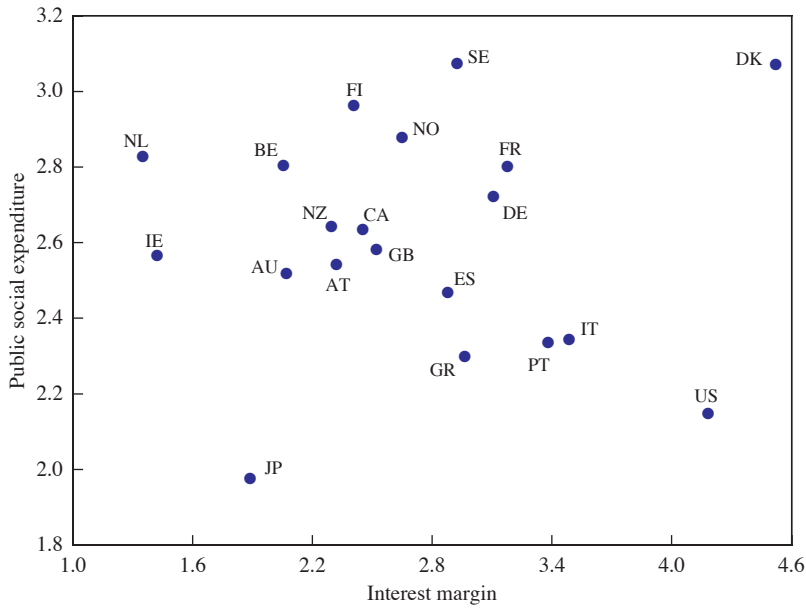
Notes: Public social expenditure is expressed as a logarithm of its share of GDP. Openness is the logarithm of the ratio of imports plus exports to GDP. See the Appendix for more details. See Glossary for a listing of country codes.

Sources: OECD; Penn World Table Version 6.2; author's calculations

reach of imperfect and incomplete financial markets, but the evidence is consistent with the more pessimistic view outlined in Section 2.1. That is, if countries are exogenously different in their ability to produce income at the aggregate level and the negative side-effects of social policy are less serious for countries that are richer to begin with (for geographical and historical reasons), then such countries may well implement more extensive redistribution than poorer ones where strenuous effort is absolutely necessary. The negative coefficient on size (as measured by population) might reflect administrative difficulties and additional distortions entailed by social policies in larger and perhaps more heterogeneous countries; Alesina *et al* (2003) examine in more detail the role as a determinant of redistribution policies of ethnic fractionalisation, which is of course not necessarily high in countries such as Japan that are large but homogeneous.

To the extent that population and real GDP per capita control for the determinants of social policy supply and demand, it is possible to assess the additional role of risk factors and financial development in shaping each country's willingness and ability to open up internationally and/or to engage its government in redistributive activities. There is no bi-variate relationship between interest margins and public social expenditure (see Figure 3), nor is there any partial correlation between those variables after controlling for other standard determinants in column (3) of

Figure 3: Interest Margins and Social Spending in OECD Countries
1990–2003 averages



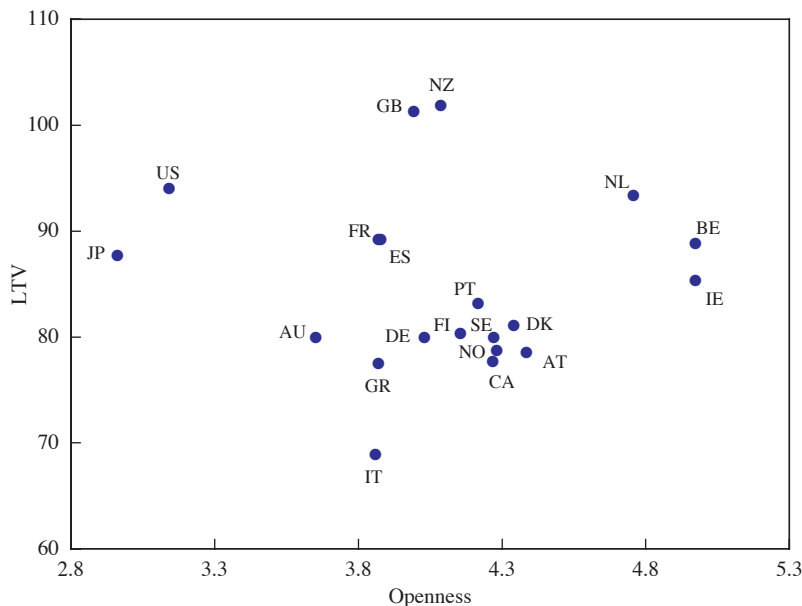
Notes: Public social expenditure is expressed as a logarithm of its share of GDP. The interest margin is the difference between lending and borrowing rates at commercial banks. See the Appendix for more details. See Glossary for a listing of country codes.

Sources: Beck, Demirgüç-Kunt and Levine (2000); OECD; author's calculations

Table 3. When the interaction between openness and interest margins is included among the regressors in column (4), however, openness *per se* appears to be irrelevant to the extent of social policies. What is associated with larger social spending is instead the combination of openness and poor financial market access, as large spreads between interest rates on households' assets and liabilities make saving and borrowing unattractive and expose consumption to large fluctuations if income shocks are larger or more frequent.

The same interpretation of cross-country facts is supported, in columns (6) and (7), by the opposite pattern of signs for the LTV ratios (which is larger in more accessible financial markets) and its interaction with openness. While the coefficient on the LTV ratio and its interactive term (measured in percentage terms) are not statistically significant in column (7), they tell a quantitatively interesting story. The average 1990s LTV ratios range between 69 per cent and 102 per cent (for Italy and New Zealand, respectively; see Figure 4 to get a sense of other values). As the LTV ratio varies between these values, the estimated total effect of openness on public social expenditure ranges from 0.32, which is almost as large as the bi-variate regressions coefficient of column (1), to essentially zero for NZ and the UK.

Figure 4: Openness and Mortgage Loan-to-valuation Ratios in OECD Countries
1990–2003 averages



Notes: LTV is the maximum loan-to-valuation ratio (in percentage points) for mortgages. Openness is the logarithm of the ratio of imports plus exports to GDP. See the Appendix for more details. See Glossary for a listing of country codes.

Sources: Chiuri and Jappelli (2003); Jappelli and Pagano (1994); Maclennan, Muellbauer and Stephens (1998); Penn World Table Version 6.2; author's calculations

3.2 Changes over time

Tables 4–6 report regressions similar to those of the previous tables, aimed at characterising relationships between openness, financial market development and government activity. To focus on within-country dynamic developments rather than on cross-country patterns, all regressions include dummies, so that the results are not influenced by any (observable or unobservable) source of cross-country variation that is constant over time. Since the credit information index is only available for very recent years, its information is essentially cross-sectional and cannot be exploited in these specifications. Also, the sample is restricted throughout to countries with at least two observations of LTV ratios.

The message of the data is similar in some respects, but different in others. Table 4 estimates a shallow (but significant) positive relationship between openness and government expenditure over time across the broadest available sample of countries, also after controlling for population and income per capita. However, the relationship is sufficiently weak to become statistically insignificant in the regression of column (3), which restricts the sample to observations with non-missing credit information. Column (4) shows that credit is strongly positively

Table 4: Within-country Relationship between Openness, Credit, and Government Consumption Share of GDP – Worldwide Sample

	(1)	(2)	(3)	(4)	(5)	(6)
	Government	Government	Government	Credit	Government	Government
Openness	0.0324 2.07	0.0456 2.78	0.0332 0.87	0.0483 0.66	0.0307 0.82	-0.1075 -2.16
Population		-0.0003 -1.34	-0.0006 -1.43	0.0002 0.26	-0.0006 -1.44	-0.0005 -1.28
GDPpc		-0.0109 -7.52	-0.0094 -5.70	0.0412 10.74	-0.0115 -6.19	-0.0084 -4.37
Credit					0.0516 3.82	0.3576 2.91
Openness*Credit						-0.0758 -2.59
No	2 750	2 750	1 840	1 840	1 840	1 840
R ²	0.8802	0.8825	0.8651	0.8933	0.8668	0.8683

Notes: All regressions include country dummies. Robust *t*-statistics are reported below the coefficients. The sample includes all available observations for the 1986–2001 period.

related to GDP per capita over time, as was the case in the cross-section estimates, and has an insignificant partial correlation with openness. In column (5) credit is positively (and GDP per capita negatively) related to government's share of GDP, and its inclusion in the regression makes openness insignificant. Finally, and most interestingly, we see in column (6) that the interaction between credit and openness has a significant negative coefficient. Once again, the development of financial markets appears to reduce the need for government economic involvement in the face of increased openness.

Retracing the cross-sectional specifications, Table 5 shows a similar pattern for regression coefficients estimated on the smaller sample of OECD countries with at least two observations (the results are broadly similar for the whole OECD sample of the cross-sectional regressions in Table 2, which also includes the Czech Republic, Hungary, Iceland, Mexico, Poland, Switzerland and Turkey). While greater openness had a positive uncontrolled relationship with government expenditure in the wider sample, its partial correlation is consistently negative in the OECD sub-sample. Differences in credit dynamics, however, are not pronounced and informative enough within developed countries to yield significant coefficients on credit and its interaction term in column (5). Fortunately, more detailed and relevant indicators of financial market development are available for these countries.

Table 6 reports regressions on the same sample that exploit the dynamic information in public social expenditure, interest differentials and loan-to-valuation ratios within each country. To convey a sense of the data's shape and of the phenomena driving the results, Figures 5 and 6 display the data graphically, at five-year intervals, focusing on a familiar subset of advanced countries. The bi-variate relationship between openness and public social expenditure is negative on a within-country basis, as shown in Figure 5. The results in columns (1–4) of Table 6 indicate that openness and public social expenditure are negatively related in the OECD sample when country dummies are included. In contrast to Agell's (2002) reading of evidence of a positive relationship between changes in openness and in employment protection legislation, this finding may indicate that redistribution policies become much more difficult in more open economies. This effect may more than compensate for the extra demand for social protection. Alternatively, a weaker interpretation is that the same structural and policy changes that affect openness differently across countries also affect social policies in the opposite direction.

Columns (5–7) of Table 6 display similarly intriguing patterns of co-variation of openness and public social expenditure shares with indicators of financial development. In column (5), where the regression controls for interest margins and its interaction with openness, the latter's main effect is a sharply negative determinant of public social expenditure, while the coefficient on the interaction term is significantly positive. This may indicate that, in situations where efficient financial markets encourage borrowing and lending, openness implies a more pronounced decline in (less necessary, and more distorting) public redistribution programs.

Figure 6 displays observations for advanced countries, at five-year intervals. It shows that the bi-variate correlation between maximum LTV ratios and openness

Table 5: Within-country Relationship between Openness, Credit, and Government Consumption Share of GDP – OECD Sample

	(1) Government	(2) Government	(3) Credit	(4) Government	(5) Government
Openness	-0.1938 -6.07	-0.0860 -2.15	-0.2110 -1.45	-0.0849 -2.07	-0.0821 -1.97
Population		-0.0038 -4.60	0.0058 2.21	-0.0039 -4.60	-0.0037 -3.01
GDPpc		-0.0034 -2.50	0.0317 4.70	-0.0036 -2.16	-0.0037 -2.35
Credit				0.0042 0.23	-0.0386 -0.19
Openness*Credit					0.0102 0.22
No	314	314	298	298	298
R ²	0.9320	0.9382	0.8040	0.9383	0.9384

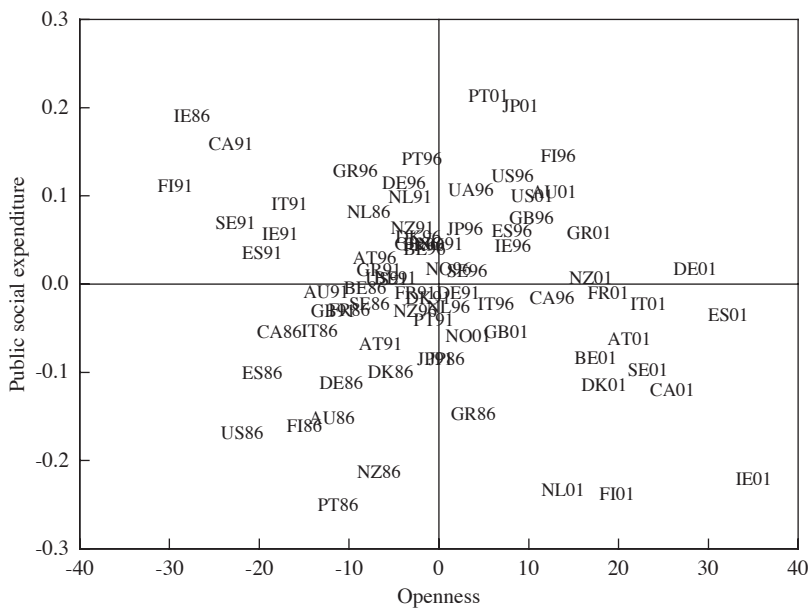
Notes: All regressions include country dummies. Robust *t*-statistics are reported below the coefficients. The sample includes all available observations for the 1986–2001 period.

Table 6: Within-country Relationship between Openness, Interest Margin or Mortgage Loan-to-valuation Ratios, and Public Social Expenditure – OECD Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp.	Pub.Soc.Exp.
Openness	-0.1117 -2.17	-0.3449 -4.87	-0.3259 -4.57	-0.2031 -4.11	-0.4764 -4.99	-0.3261 -4.61	0.2417 2.39
Population		0.0083 4.23	0.0086 4.46	0.0069 4.13	0.0056 2.48	0.0086 4.46	0.0061 3.12
GDPpc		0.0074 2.60	0.0060 2.14	-0.0121 -4.60	-0.0100 -3.98	0.0061 2.22	0.0065 2.39
Int.:Margin				-4.2092 -3.61	-36.4688 -3.57		
Openness*Int.:Margin				7.8368 3.14			
LTV						-0.0001 -0.05	0.0286 7.54
Openness*LTV							-0.0069 -7.50
No	314	314	300	199	199	300	300
R ²	0.8960	0.9077	0.9108	0.9610	0.9632	0.9108	0.9193

Notes: All regressions include country dummies. Robust *t*-statistics are reported below the coefficients. The sample includes all available observations for the 1986–2001 period.

Figure 5: Openness and Social Spending in OECD Countries
Deviations from country mean



Notes: Available observations of deviations of 1986, 1991, 1996 and 2001 data from 1986–2001 country-specific averages. See the Appendix for more details. See Glossary for a listing of country codes.

Sources: Chiuri and Jappelli (2003); Jappelli and Pagano (1994); Macleannan *et al* (1998); Penn World Table Version 6.2; author's calculations

changes is positive. This is consistent with the notions that openness makes financial market development more necessary and that financial market development makes openness more palatable.⁷ While the LTV ratio and its interactive term were not significant (though with the right sign pattern) in cross-sectional estimates, they are very significant along the time-series dimension in column (7). Although in cross-section the relationship between openness and government was estimated to be either positive or absent, depending on financial market developments, in the time-series regressions it is consistently negative.⁸

The insignificant cross-sectional estimates may be due to the limited range of the independent variable; within this set of countries, financial markets have developed faster in laggard countries, and the convergence pattern implies that averages are not as sharply different as early observations. It may also indicate that uncontrolled country characteristics influence choices of openness and social policies in such a

7. While the direction of causality is of course unclear, either or both channels of interaction are likely to be at work in the data, along with other factors that may explain why controlling for population and GDP per capita deprives the LTV ratio of all significance in the regression of column (6).

8. The variation in the implied relationship between openness and public social expenditure is again large, ranging from around -0.5 for the 2001 values of LTV ratio deviations from the Netherlands, United Kingdom, and New Zealand country means, to only -0.15 for the 1986 LTV ratio deviation observed in Italy.

amplify the undesirable side-effects of policies). The insights discussed in Section 2 suggest that international integration may amplify market risks at the same time as it makes it increasingly difficult for governments to provide households with insurance against them and increasingly important for households to access private financial markets. The simple evidence discussed in Section 3 supports the empirical relevance of this policy prescription, especially for developing countries, but also for those among industrialised countries that have more extensively relied on taxes, transfers and regulation.

Across countries, the data display patterns of increasing openness, decreasing government redistribution activity and increasing depth and efficiency of credit markets. Along the time-series dimension, and especially in developed countries, the implications of openness (or concurrent exogenous developments) for both income risks and the desirability of redistribution policies appear to be more than offset by the increasing difficulties of operating such policies. A possible interpretation of the evidence views globalisation trends, driven by technological and multilateral trends beyond individual countries' control, as a factor weakening governments' power to control market-driven income distribution. Shrinking public budgets naturally increase demand for private financial services, and increase the need for appropriate regulation and suitable legal frameworks to ensure that demand is met by adequate supply in private financial markets. Accordingly, governments should face the challenges of globalisation by strengthening their economies' financial infrastructure, to allow private contractual relationships to smooth consumption in the face of increased specialisation and foreign shocks.

While improving financial market infrastructures is not costless, it should be given high priority in countries where economic integration entails new risks and, at the same time, makes it difficult to operate redistribution policies. From this perspective, the United Kingdom's financial market liberalisation and development is consistent with that country's experience of public policy and labour market reforms in the 1980s (Koeniger 2004), and it is not surprising to find that individuals whose age and income make them more likely to borrow are more keenly in favour of redistribution in countries where credit supply is relatively constrained (Bertola and Koeniger 2007).

Further empirical work should adopt more suitable dynamic specifications than those of this paper. It could bring a similar approach to analysing the relationship between openness and wage-setting and employment regulation, along the lines of Agell's (2002) perspective on labour market institutions as a risk-management device, and follow Lo Prete (2007) in relating devices to redistribute income within countries to country-level consumption and income dynamics.

It would also be very interesting to model how the choice between private and public insurance schemes is driven by underlying structural and historical factors affecting their relative efficiency. It is both very important and extremely difficult to assess the extent to which substitution is endogenously driven by trends such as the increasing internationalisation of market interactions. It is important, because globalisation would be self-sustaining if it led to efficient private financial markets

at the same time as they crowd out public schemes. However, it would sow the seeds of its own demise if it is perceived as forcing unpalatable risks on citizens of countries whose inefficient financial markets cannot shelter them as effectively as trade and government protection used to.

And it is difficult, because the data cannot shed much light on structural relationships between exogenous conditions and endogenous policy relationships. In order to detect patterns of statistical causality, the literature has focused on persistent influences of ancient conquests and colonisations on countries' legal frameworks and institutional developments. As discussed in Rodrik, Subramanian and Trebbi (2004), historical legacies are useful as instrumental variables for the empirical purpose of identifying and assessing the role of exogenous factors. However, countries are not condemned by history. To the extent that historically determined financial market development can substitute for public provision of insurance and savings vehicles, policy actions aimed at making financial markets more easily accessible and more efficient may be a key condition for economic integration to be welfare-enhancing and politically acceptable.

Relevant formal modelling should focus on the interplay of information problems with determinants of financial market efficiency (such as legal traditions in La Porta *et al* 1998) and of policy effectiveness (such as 'civicness' indicators constructed from survey information in Algan and Cahuc 2006). Bertola and Koeniger (forthcoming) propose a simple model of an economy where unobservable effort and moral hazard problems hamper the role of private markets and government policies in smoothing consumption. This perspective may be used to characterise how borrowing constraints, market transaction costs and policy administration costs may shape the trade-off between insurance, efficiency and the relative importance of private and collective instruments for smoothing income. Bringing this perspective to bear on such cross-country panel data, it might be possible empirically to detect relationships between underlying structural features of countries, trends affecting the desirability and feasibility of public policies and policy action and reaction patterns.

Appendix: Data definitions and sources

CredInfo is the ‘depth of credit information index’ downloadable from the World Bank’s ‘Doing Business’ website, meant to measure rules affecting the scope, accessibility and quality of credit information available through either public or private credit registries. It is constructed as follows from data defined and documented in Djankov, McLiesh and Shleifer (2007). For each of the six features of the credit information system a score of 1 is assigned if: (1) ‘both positive credit information (for example, loan amounts and pattern of on-time repayments) and negative information (for example, late payments, number and amount of defaults and bankruptcies) are distributed’; (2) ‘data on both firms and individuals are distributed’; (3) ‘data from retailers, trade creditors or utility companies as well as financial institutions are distributed’; (4) ‘More than 2 years of historical data are distributed. Registries that erase data on defaults as soon as they are repaid obtain a score of 0 for this indicator’; (5) ‘data on loans below 1% of income per capita are distributed. A registry must have a minimum coverage of 1% of the adult population to score a 1 for this indicator’; and (6) ‘by law, borrowers have the right to access their data in the largest registry in the country. The index ranges from 0 to 6, with higher values indicating the availability of more credit information, from either a public registry or a private bureau, to facilitate lending decisions’.

Credit is the logarithm of variable *pcrdbgdp* ‘private credit by deposit money banks/GDP’ from the World Bank’s Financial Structure Dataset (Revised: 17 October 2007), as defined and documented in Beck *et al* (2000).

GDPpc is the variable *cgdp* ‘real gross domestic product per capita’ from the Penn World Table Version 6.2 (Heston, Summers and Aten 2006), divided by 1000 (hence measured in thousands of 2000 US\$).

Government expenditure is the variable *cg* ‘government share of CGDP’ from the Penn World Table Version 6.2 (Heston *et al* 2006).

Int.Margin – the difference between lending and borrowing rates at commercial banks – is the variable *netintmargin* ‘net interest margin’ from the World Bank’s Financial Structure Dataset (revised in October 2007), as documented in Beck *et al* (2000).

LTV is the maximum loan-to-valuation ratio (in percentage points) for mortgages, interpolated from data available on or around 1976, 1984, 1994 and 2001 from Jappelli and Pagano (1994); Maclennan *et al* (1998); and Chiuri and Jappelli (2003).

Openness – the logarithm of the ratio of imports plus exports to GDP – is the variable *openc* ‘openness in current prices’ from the Penn World Table Version 6.2 (Heston *et al* 2006). As in the original Rodrik (1998) regressions, the sample excludes observations (for Hong Kong and Singapore) where this variable exceeds 200 per cent. The results are very similar when those observations are included, or when the variable *openk* ‘openness in constant prices’ is used instead of *openc*.

Population is the variable *pop* ‘population’ from the Penn World Table Version 6.2 (Heston *et al* 2006), divided by 1000 (hence measured in millions).

Pub.Soc.Exp. is the logarithm of the sum in per cent of GDP of the following data from the OECD 1980–2001 Social Expenditure Database: 3. Incapacity-related benefits; 4. Health; 5. Family; 6. Active labor market programmes; 7. Unemployment; 8. Housing; and 9. Other social policy areas. (Only 1. Old age and 2. Survivors are excluded from total social expenditure.)

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