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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 and offset the welfare effects of labour income risk and unequal consumption dynamics. 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 individual choices 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, of government economic involvement, and of financial development are consistent with the idea that financial market development can substitute public schemes when economic integration calls for more effective household consumption smoothing. 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 internationalization of economic relationships.

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Introduction

Regulatory and tax-subsidy policies play an important role, alongside financial market access, in smoothing income and consumption and protecting households from labour market and lifecycle risks. The configuration of policies and markets differs across countries, and interacts with changing economic circumstances. New types of income risk became relevant when industrialization led to increased specialization and urbanization 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 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. In economic systems where access to efficient financial markets makes it possible for households to manage income risk with private instruments, conversely, 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 instruments. In the post-War period, new risks have arisen from deeper international economic integration and related processes of deindustrialization 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 stabilize labour income in times of heightened international competition and intense structural change.

This paper focuses on interactions between the internationalization of markets, national public redistribution schemes, and private financial market development. As pointed out by Rodrik (1998), Agell (2002), and others, the risks entailed by international trade and specialization may induce more pervasive interference with market-driven income distribution processes in more open countries. 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 1 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 2 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 of its public policies' ability to shape citizens' incomes and consumption. The concluding Section 3 discusses implications for policy and for further research.

1. Risk, markets, and redistribution

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

1.1 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 in all household's life: that of seeing their labour income disappear, temporarily or permanently, when product markets turn against their occupation or profession. Labour income differences 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

² See e.g. Bertola, Foellmi, Zweimueller (2006, Ch.8) for an exposition of this perspective, and of its limitation.

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 wage differentials need to be larger, in order to motivate mobility, when they are less permanent.³ 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, its trends and fluctuations will be primarily reflected in the level and volatility of workers' consumption. Not surprisingly, in fact, empirical earnings and consumption data tracks 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 circumstance. 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 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 law and contract enforcement services to 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 payment of subsidies 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 they encourage 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 subsidy payments, and may be more easily administered in some countries. For example, employment protection legislation can substitute unemployment insurance schemes, and

³ Bertola and Ichino (1995), Ljungqvist and Sargent (1998).

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 maximize welfare in much the same unrealistic circumstances of perfect information and enforcement that would support perfect and complete markets for contingent transfers. Just like real-life markets, so real-life policies face serious problems in their attempts to buffer income shocks.

On the one hand, if political decision 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 solidarity feelings, 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 realizations 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, so they can imply that policies 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 insurance companies from offering insurance against bad labour-market luck. Workers will not work as hard to avoid job loss and to find new jobs when they are insured against unemployment, making it difficult for employers to fire redundant workers stabilizes workers' labour income but 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 reflects the historical development of Nation-States. In European countries, legislation meant to endow workers with some bargaining power and to insure them against health, unemployment, and old-age hazards was introduced at times of actual or feared social unrest, in Bismarck's industrializing 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), while the Bismarckian model of continental European countries such as France and Germany is firmly rooted in labour market regulation, with centralized wage determination and stringent employment protection legislation, and also assigns an important role to mandatory pension, health, and unemployment insurance programs administered by government entities.

The Beveridgian model of the United Kingdom features comparatively light regulation of wage determination and employment relationships and general entitlement to safety-net benefits financed by general taxation, rather than insurance payouts 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 (2007a), can make it less necessary to rely on government redistribution in order to smooth consumption in the face of individual-specific 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 suitable to support private 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, while perhaps fostering relatively efficient bureaucratic administration of government schemes.

1.2 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. The speed of economic integration differs across countries and periods, however, 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 instability 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 do 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 to 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. Interesting relationships can however 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 factor, 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, low skill workers more strongly oppose immigration than high skill workers in countries where immigrant flows are more markedly 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, high-skill 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 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), who find that variation over time within a sector of indicators of FDI activity, 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 unionization, education, and income.

If labour and product markets generate more labour income risk as they 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 disappearance of tax bases when potential taxpayers can move income to other constituencies, rather than just reduce labour supply. National subsidy policies are more expensive when they attract recipients from other constituencies, and labour market institutions similarly 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 access to cross-border tax arbitrage make it more important and easier for private agents to try and 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 choice, 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 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 which may differ across countries. Among these, it is interesting to consider those that also influence the accessibility and efficiency of household financial instruments.

2. Openness, government, and finance in country panel data

Social policy should play a smaller role when and where weaker safety nets are needed, for example because financial markets can play much the same role, or when its implementation is difficult, for example because international competitiveness considerations make its efficiency costs less affordable. This perspective can offer a useful interpretation of differences across countries and changes 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 and subsidy policies meant to decouple disposable income from market outcomes, and for policies meant to interfere with market outcomes so as to reduce the width and frequency of labour income instability.

The relevant relationships between these aspects and 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 most 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 observed redistribution, as discussed above, reflects on administrative efficiency and on political tensions and decision processes, as well as on the desire to offset the *ex post* consumption fluctuations induced by uninsurable shocks stemming from international competition and other individual income determinants. International economic integration is driven both by technological improvements that make it increasingly less costly to ship goods and transmit information across countries, and by policy choices as regards trade and factor-movement liberalization. Thus, opposition to economic integration can be explained by its interactions with redistribution policies and with other instruments of collective choice which aim at goals beyond reach of imperfect market interactions.

As to 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 as to 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, Foellmi, and Zweimueller, 2006) and what empirical evidence can be gathered from available data (see Clarke, Xu, Zou, 2003; Bonfiglioli, 2005) suggest that financial market development is not monotonically related to inequality outside the unrealistic limit 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; and, by making it easier to undertake risky investments, access to loans and stocks can imply wider *ex post* income differences across investors.

To assess interactions between openness and redistribution and financial markets' structure and development, it can be instructive to inspect the evidence viewing government policies as the left-hand side variable in simple regressions where the explanatory variable 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 a relevant and observable proxy for the phenomena of interest.

1.2 Cross-country patterns

To inspect the influence of openness and financial development on government's interference with market-determined income distribution, consider first the cross-sectional regressions in Tables 1-3. The first two columns reproduce for the large Penn World Tables sample of countries, on a 1990-2003 average basis, Rodrik's (1998) basic result: in countries where imports and exports are a larger proportion of aggregate income, also the government's share of GDP is larger.⁴ This remains true when controlling for Population (insignificantly positive) and for GDPpc, i.e. real per capita income, which after controlling for openness shows a negative partial correlation with government's share of income.

Consider next patterns of co-variation between these variables and financial development indicators. A variable measuring credit extended by deposit 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 1990-2003 period for a Credit indicator (see the Appendix for data definitions and sources). In column (3), Table 1 reports column (2)'s regression results for this restricted sample, finding that the relationship between Openness and government consumption is even stronger. Column (4) shows that credit (measured as a log ratio to GDP) is positively

⁴ The regressions, as in Rodrik (1998), are specified in logarithmic terms. Other functional forms do not alter the pattern of coefficient signs and significances in this and all other tables, but tend to yield worse overall fit.

associated with Openness (after controlling for Population and GDPpc, both of which also have positive and significant coefficients).

Columns (5) and (6) proceed to insert the Credit variable in the regression relating government consumption and Openness. In the linear specification (5), Credit has no impact on government consumption, and leaves the other coefficients unchanged. But when Credit is entered both linearly and as an interaction with Openness, the coefficients are more significant, and the interaction is negative. This is qualitatively consistent with the idea, discussed in Section 1, that financial markets can substitute 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.

Credit, all else equal, should be negatively related to structural factors that make it difficult to access financial markets in such countries. But the volume transacted on the credit market, as on any other market, depends on demand factors as well as on supply factors. To the extent that credit reflects the degree of heterogeneity across individuals income histories (Iacoviello, 2006), and income shocks depend on openness because trade and specialization imply stronger income risk for producers within each country, financial market volume data are jointly determined with Openness indicators. To try and disentangle supply factors from these and other demand factors (also influenced by welfare state and labour market features), the last three regressions reported in Table 1 exploit a credit information index, CredInfo (see the Appendix for definition and source). Along with property rights enforcement, information is a key element of financial markets' infrastructure (Jappelli and Pagano, 2006), and of their ability to manage income risk with private contracts market rather than government instruments. It is interesting to find in column (7) that the coefficient of CredInfo as a determinant of government consumption is indeed negative, and more significant than that of Credit; in column (8), that the pattern of CredInfo main and interaction coefficient signs is again consistent with substitutability of financial market improvements and larger governments in the face of deeper internationalization; and in column (9) that when CredInfo is used as an instrument for credit volume in the 127 observations where both variables are available – attempting to isolate its supply-side determinants from demand-side ones that also influence government spending – the coefficient of Credit is more negative and more significant than in column (5), where credit volume was completely irrelevant.

Government's GDP share is available for a very wide sample of countries, but is of course a poor measure of the income-stabilization and consumption-smoothing government activities that 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 market (lending-borrowing interest margins and LTV indicators of maximum borrowing limits on housing purchases).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 specification's change when the OECD restricted sample is used. Table 2 shows that across OECD countries, as was also the case 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). And it all but vanishes when Credit – which is highly correlated with GDP per capita in column (3) – and Credit's interaction with Openness are included in column (5). Like in Table 1, the negative sign of the Openness*Credit significant interaction coefficient, and of the large and imprecisely estimated IV coefficient in column (6), are qualitatively consistent with better developed financial markets reducing the Government-size effect of increased openness.

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 LTV observation is available.⁶ In Table 3, where the dependent variable is a measure of Public Social Expenditure (see the Appendix for definition), the first four columns largely deliver a message similar to that of the corresponding columns of Table 2. Openness is not strongly related to Public Social Expenditure once country size and income are controlled for. As shown in Figure 1, there is a clear upward-sloping 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 negative outliers to that 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 by inclusion of income levels and Population.

⁵ Public social expenditure and interest rate margins are available for 27 countries (Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States). LTV information is not available for 6 of these countries (Czech Republic, Iceland, Korea, Mexico, Poland, Switzerland); only one LTV observation is available for Turkey.

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

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 subsidies to perform efficiency-enhancing roles that are beyond reach of imperfect and incomplete financial markets, but the evidence is consistent with Section 1.1's more pessimistic view 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, such countries may well implement more extensive redistribution than poorer ones where strenuous effort is absolutely necessary. The negative coefficient of population size may be interpreted in terms of the administrative difficulties and additional distortions entailed by social policies when countries are highly heterogeneous, perhaps in terms of ethnic fractionalization (Alesina et al, 2004).

To the extent that Population and real GDP per capita control for these 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 Int.Margin and Public Social Expenditure (see Figure 3), nor there is any partial correlation between those variables after controlling for other standard determinants in column (3) of Table 3. When the interaction between Openness and Int.Margin is included among the regressors in column (4), however, Openness per se appears to be irrelevant to the intensity 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 households' asset and liability return rates 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 loan-to-value indicator (LTV, which is more positive in more accessible financial markets) and its interaction with Openness. While the coefficients of loan-to-value (measured in percentage points) are not statistically significant in column (7), they tell a quantitatively interesting story. The average 1990s LTV observations range between 69% and 102% (for Italy and New Zealand, respectively; see Figure 4 to get a sense of other values). As the LTV 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 (0.05 for the United States 94% LTV, and -0.03 for the United Kingdom's and New Zealand' LTV indicators, which slightly exceed 100% in the period average).

1.2 Changes over time

Tables 4-6 report regressions similar to those of the previous tables, aimed at characterizing 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 variation that is constant over time and only varies across countries. Since the Cred.Info index is only available for very recent years, its information is essentially cross-sectional and cannot be exploited in these specification, and the sample is restricted throughout to countries with at least two LTV observations.

The message of the data is similar in some respects, interestingly different in others. Table 4 estimates a shallow (but significant) positive relationship between Openness and government consumption over time across the broadest available sample of countries, also after controlling for Population and income per capita dynamics. But the relationship is sufficiently weak to become statistically insignificant in the regressions of column (3), which restrict the sample to observations with non-missing Credit information. Column (4) shows that Credit is strongly positively 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) associated with 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 changes has a significant negative coefficient. Once again, development of financial markets appears to lessen the need for government economic involvement in the face of increased openness.

Retracing the cross-sectional specification steps, Table 5 shows a similar pattern for regression coefficients estimated on the smaller sample of OECD countries with at least two LTV observations (the results are broadly similar for the whole OECD sample of the cross-sectional regressions in Table 2, that also includes Czech Republic, Hungary, Iceland, Mexico, Poland, Switzerland, Turkey). While larger Openness had a positive uncontrolled association with government consumption in the wider sample, its partial correlation with Public Social Expenditure is consistently negative in the OECD sub-sample. Differences in credit dynamics, however, are not as pronounced and informative within developed countries as to yield significant interaction coefficients 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 information in Public Social Expenditure, interest differential, and loan-to-value dynamics 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 5-year intervals, focusing on a familiar subset of advanced countries. The bi-variate association between Openness and Public Social Expenditure is negative on a within-country basis, as shown in Figure 5. And throughout all specifications of Table 6, Openness and Public Social Expenditure are negatively related in the OECD sample along 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 policy does become so much more difficult in more open economies as to more than compensate higher demand for social protection – or, in a milder interpretation, that the same structural and policy changes that increase openness differently across countries also affect social policy in the opposite direction.

Columns (5-7) of Table 6 display similarly intriguing patterns as regards co-variation of Openness and Public Social Expenditure ratios with indicators of financial development. In column (5), where the regression controls for Int.Margin and its interaction with Openness, the latter's main effect is a sharply negative determinant of public social expenditure, and the interaction is significantly positive. This may indicate that, in situations where efficient financial markets ease borrowing and lending, openness implies a more pronounced decline in (less necessary, and more distorting) public redistribution programmes.

Figure 6 displays observations for advanced countries, at 5-year intervals. It shows that the bi-variate correlation between the loan-to-value ratio and openness changes is positive. This agrees with the notion that openness makes financial market development more necessary, or that financial market development makes openness more palatable: while the direction of causality is of course unclear, either or both channels of interaction are likely at work in the data, along with other factors that may explain why in the regression of column (6) controlling for Population and GDP per capita deprives the LTV of all significance. But the loan-to-value main effect and interactions that were not significant (though with the right sign pattern) in cross section estimates are very significant along the time series dimension in column (7). And while in cross section the relationship between openness and government was estimated to be either positive or absent, depending on financial market development, in time series it is consistently negative. The variation in the implied relationship between Openness and Public Social Expenditure is again large, ranging from over -0.5 for the 2001 values of LTV deviations from the Netherlands, United Kingdom, and New Zealand country means, to only -0.15 for the 1986 LTV deviation observed in Italy.

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 way as to preserve within-country income redistribution. The high significance of the LTV main effect and Openness interaction along the time-series dimension may similarly be spurious in yearly data regressions. Inclusion of contemporaneous GDP aims at controlling for cyclical influences, but the relationship between openness and public spending may be driven by short-run fluctuations as well as by the trends represented by interpolated LTV observations. While dynamic specifications of the relevant relationship are beyond the scope of this paper (and of available data), it is interesting to find that within-country panel estimates offer statistically strong evidence that changes in LTV, openness, and government spending are quantitatively important, and vary over time in ways consistent with Section 1's perspective.

3. Policy implications and further research

This paper's broad perspective views observed redistribution policies as a result of the interplay between the factors determining their desirability (labour income uncertainty and the ability of markets to smooth its consumption implications) and of factors determining their effectiveness (the government's ability to exploit superior information and enforcement, and the markets' ability to circumvent regulation and amplify policies' undesirable side effects). The insights discussed in Section 1 suggest that internationalization of economic relationships 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 2 supports the empirical relevance of this policy prescription, especially for developing countries, but also for those among industrialized countries that have more extensively relied on taxes, subsidies, and regulation.

Across countries, the data display patterns of increasing openness, decreasing government redistribution activity, increasing depth and efficiency of credit markets. Along the time series dimension, and especially in developed countries, the implications of openness or concurring exogenous developments for income risks and the desirability of redistribution policies appear to be more than offset by the increasing difficulties of operating them. A possible interpretation of the evidence views globalization trends, driven by technological and multilateral trends beyond individual countries' control, as a weakening factor for 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 globalization challenges by strengthening their economies' financial infrastructure, so as to allow private contractual relationships to smooth the consumption implications of income flows destabilized by increased specialization and foreign-origin 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 liberalization 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 circumstances make it desirable to borrow are more keenly in favour of redistribution in countries where credit supply is relatively constrained (Bertola and Koeniger, 2007a). Further empirical work should adopt more suitable dynamic specifications than those of this paper. It could bring a similar approach to analyse 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 within-country income redistribution devices to country-level consumption and income dynamics.

It would be very interesting and should be possible to go beyond empirical correlations, which sensibly indicate that private and public contingent redistribution and insurance schemes are substitutable to each other, and model how the choice between the two is driven by underlying structural and historical factors affecting their relative efficiency in pursuing politically desirable goals. It is both very important and extremely difficult to assess the extent to which private/public substitution can be endogenously driven by such trends as increasing internationalization of market interactions. It is important, because while globalization trends would be self-sustaining if they lead to development of efficient private financial markets at the same time as they crowd out public schemes, they would sow the seeds of their own demise if they are perceived to force unpalatable risk 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, but countries are not condemned by history. To

the extent that historically determined financial market development can substitute private to 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, 2005). Bertola and Koeniger (2007b) propose a simple model of an economy where unobservable effort and moral hazard problems hamper both private markets’ and government policies’ consumption-smoothing role, which may be used to characterize 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 smoothing instruments. Bringing this perspective to bear on such cross-country panel information as that discussed in this paper, it might be possible empirically to detect relationships between underlying structural features of countries (such as their degree of political and perhaps ethnic cohesion), trends affecting the desirability and feasibility of public policies (such as those driven by the technological and multilateral liberalization factors underlying increasing globalization of economic relationships), and policy action and reaction patterns.

APPENDIX: Data definitions and sources

CredInfo is the Credit Information index downloadable from the World Bank's Doing Business site, meant to measure "The depth of credit information index measures 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). A score of 1 is assigned for each of the 6 features of the credit information system: (1) Both positive (for example, amount of loan and on-time repayment pattern) and negative (for instance, number and amount of defaults, late payments, bankruptcies) credit information is distributed (2) Data on both firms and individuals are distributed. (3) Data from retailers, trade creditors or utilities as well as financial institutions are distributed. (4) More than 2 years of historical data are distributed. (5) Data on loans above 1% of income per capita are distributed. (6) By law, borrowers have the right to access their data. 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: Jan 17, 2007), as defined and documented in Beck, Demirgüç-Kunt, Levine (2001).

GDPpc is variable `cgdp` "Real Gross Domestic Product per Capita" from the Penn World Tables 6.2, divided by 1000 (hence measured in thousands of 2000 US\$).

Government is variable `cg` "Government Share of CGDP" from the Penn World Tables 6.2.

Int.Margin is the difference between lending and borrowing rates at commercial banks, variable `netintmargin` "Net Interest Margin" from the World Bank's Financial Structure Dataset (Revised: Jan 17, 2007), as documented in Beck, Demirgüç-Kunt, Levine (2001).

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

Openness is the logarithm of the ratio of imports plus exports to GDP, variable `openc` "Openness in Current Prices" from the Penn World Tables 6.2. As in the original Rodrik regressions, the sample excludes observations (for Hong Kong and Singapore) where this variable exceeds 200%. The results are very similar when those observations are included, or when variable `openk` "Openness in Constant Prices" is used instead of `openc`.

Population is variable `pop` "Population" from the Penn World Tables 6.2, divided by 1000 (hence measured in millions).

Public Social Exp. is the logarithm of the sum in percent of GDP of the following data from the OECD 1986-2001 Public Social Expenditure database: 3.Incapacity Related Benefits 4.Health 5.Family 6.Active Labour Market Policies 7.Unemployment 8.Housing 9.Other, including social assistance. (Only 1. Old age and 2.Survivors are excluded from total Public Social Expenditure.)

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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 (*)
Openness	0.1882	0.2384	0.2761	0.3703	0.2779	0.2097	0.2741	0.3877	0.3963
	3.19	3.91	4.35	2.91	4.46	2.58	4.28	3.08	3.38
Population		0.0002	0.0004	0.0016	0.0004	0.0004	0.0004	0.0003	0.0009
		1.28	1.11	2.78	1.12	0.94	2.10	1.88	2.04
GDPpc		-0.0160	-0.0106	0.0922	-0.0101	-0.0107	-0.0098	-0.0113	0.0187
		-4.96	-2.99	14.41	-1.90	-2.01	-2.35	-2.63	0.91
Credit					-0.0048	0.2180			-0.3173
					-0.10	0.92			-1.41
Openness*Credit						-0.0531			
						-0.95			
CredInfo							-0.0268	0.1397	
							-1.67	1.17	
Openness*CredInfo								-0.0385	
								-1.42	
N	184	184	135	135	135	135	152	152	127
r2	0.0616	0.1462	0.1481	0.5652	0.1482	0.1531	0.1690	0.1793	.

Observations are averages over periods where data are available for each country and variable between 1985 and 2003; 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. (*) Credit is instrumented with CredInfo. Sample: all countries, except those where openness exceeds 200% (Hong Kong and Singapore) and countries where data are missing.

Table 2. Cross-country relationship between openness, credit, and government consumption share of GDP: OECD sample

	(1) Government	(2) Government	(3) Credit	(4) Government	(5) Government	(6) Government (*)
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	
N	27	27	27	27	27	27
r2	0.1734	0.2366	0.7854	0.2430	0.3995	.

Observations are averages over periods where data are available for each country and variable between 1985 and 2003; 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. (*) Credit is instrumented with CredInfo. Sample: OECD countries included in the OECD social expenditure database.

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. (*)	Pub.Soc. Exp.	Pub. Soc.Exp.
Openness	0.3794	0.1523	0.1504	-0.0509	0.2105	0.1282	1.0754
	4.41	1.54	1.42	-0.32	0.74	1.02	0.64
Population		-0.0031	-0.0029	-0.0024	-0.0080	-0.0033	-0.0034
		-2.88	-2.31	-1.84	-1.63	-4.27	-4.28
GDPpc		0.0370	0.0338	0.0370	0.1367	0.0441	0.0410
		3.11	2.10	2.28	1.59	5.49	5.06
Int.Margin			-1.2738	-39.9544	39.4884		
			-0.47	-2.10	1.16		
Openness*Int.Margin				9.9738			
				2.03			
LTV						0.0034	0.0470
						1.19	0.64
Openness*LTV							-0.0109
							-0.58
N	27	27	27	27	27	21	21
r2	0.1992	0.6049	0.6074	0.6251	.	0.7606	0.7645

Observations are averages over periods where data are available for each country and variable between 1985 and 2003; 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. (*) Int.Margin is instrumented with CredInfo. Sample: OECD countries included in the OECD social expenditure database.

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	0.0456	0.0332	0.0483	0.0307	-0.1075
	2.07	2.78	0.87	0.66	0.82	-2.16
Population		-0.0003	-0.0006	0.0002	-0.0006	-0.0005
		-1.34	-1.43	0.26	-1.44	-1.28
GDPpc		-0.0109	-0.0094	0.0412	-0.0115	-0.0084
		-7.52	-5.70	10.74	-6.19	-4.37
Credit					0.0516	0.3576
					3.82	2.91
Openness*Credit						-0.0758
						-2.59
N	2750	2750	1840	1840	1840	1840
r2	0.8802	0.8825	0.8651	0.8933	0.8668	0.8683

All regressions include country dummies. Robust standard errors are reported below the coefficients. The sample includes all available observations for the 1986-2001 period.

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	-0.0860	-0.2110	-0.0849	-0.0821
	-6.07	-2.15	-1.45	-2.07	-1.97
Population		-0.0038	0.0058	-0.0039	-0.0037
		-4.60	2.21	-4.60	-3.01
GDPpc		-0.0034	0.0317	-0.0036	-0.0037
		-2.50	4.70	-2.16	-2.35
Credit				0.0042	-0.0386
				0.23	-0.19
Openness*Credit					0.0102
					0.22
N	314	314	298	298	298
r2	0.9320	0.9382	0.8040	0.9383	0.9384

All regressions include country dummies. Robust standard errors 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 loan-to-value mortgage 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	-0.3449	-0.3259	-0.2031	-0.4764	-0.3261	0.2417
	-2.17	-4.87	-4.57	-4.11	-4.99	-4.61	2.39
Population		0.0083	0.0086	0.0069	0.0056	0.0086	0.0061
		4.23	4.46	4.13	2.48	4.46	3.12
GDPpc		0.0074	0.0060	-0.0121	-0.0100	0.0061	0.0065
		2.60	2.14	-4.60	-3.98	2.22	2.39
Int.Margin				-4.2092	-36.4688		
				-3.61	-3.57		
Openness*Int.Margin					7.8368		
					3.14		
LTV						-0.0001	0.0286
						-0.05	7.54
Openness*LTV							-0.0069
							-7.50
N	314	314	300	199	199	300	300
r ²	0.8960	0.9077	0.9108	0.9610	0.9632	0.9108	0.9193

All regressions include country dummies. Robust standard errors are reported below the coefficients. The sample includes all available observations for the 1986-2001 period.

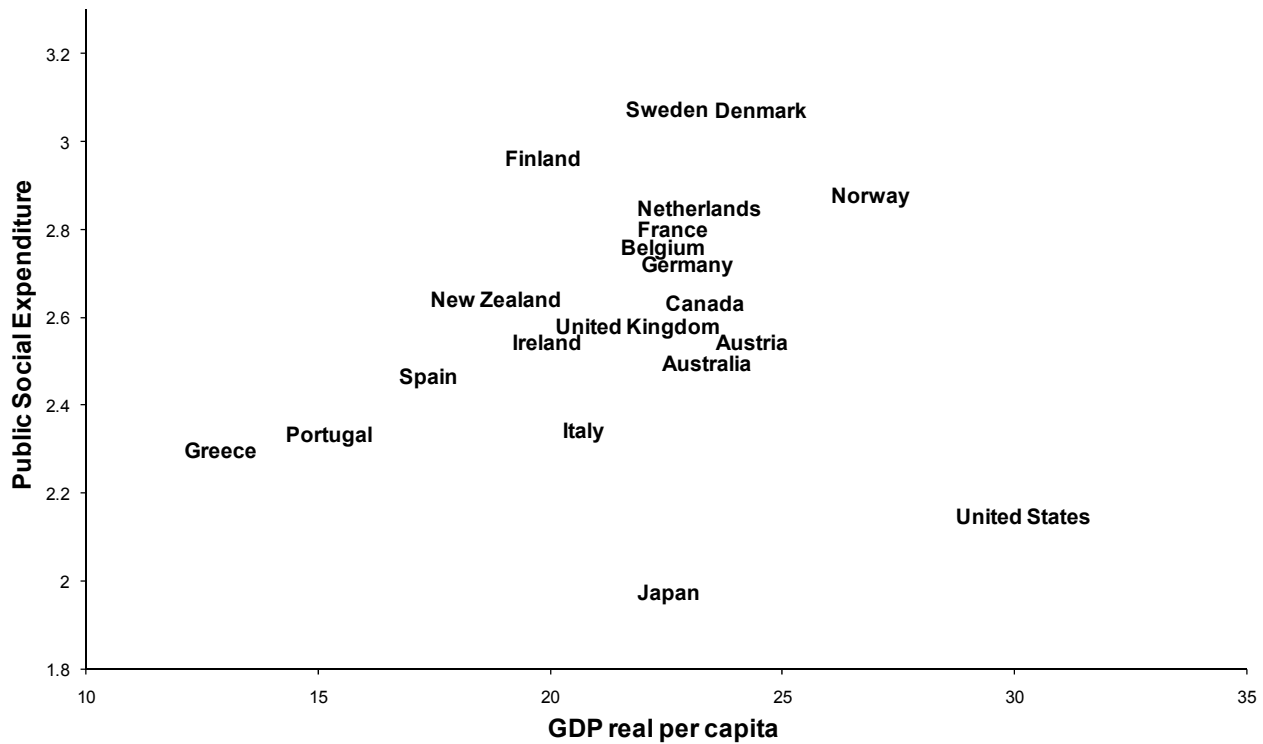


Figure 1: Income levels and social spending in advanced countries. (Logarithm of real GDP per capita and logarithm of public social expenditure as a percentage of GDP, 1990-2003 averages; see Appendix for sources and definitions).

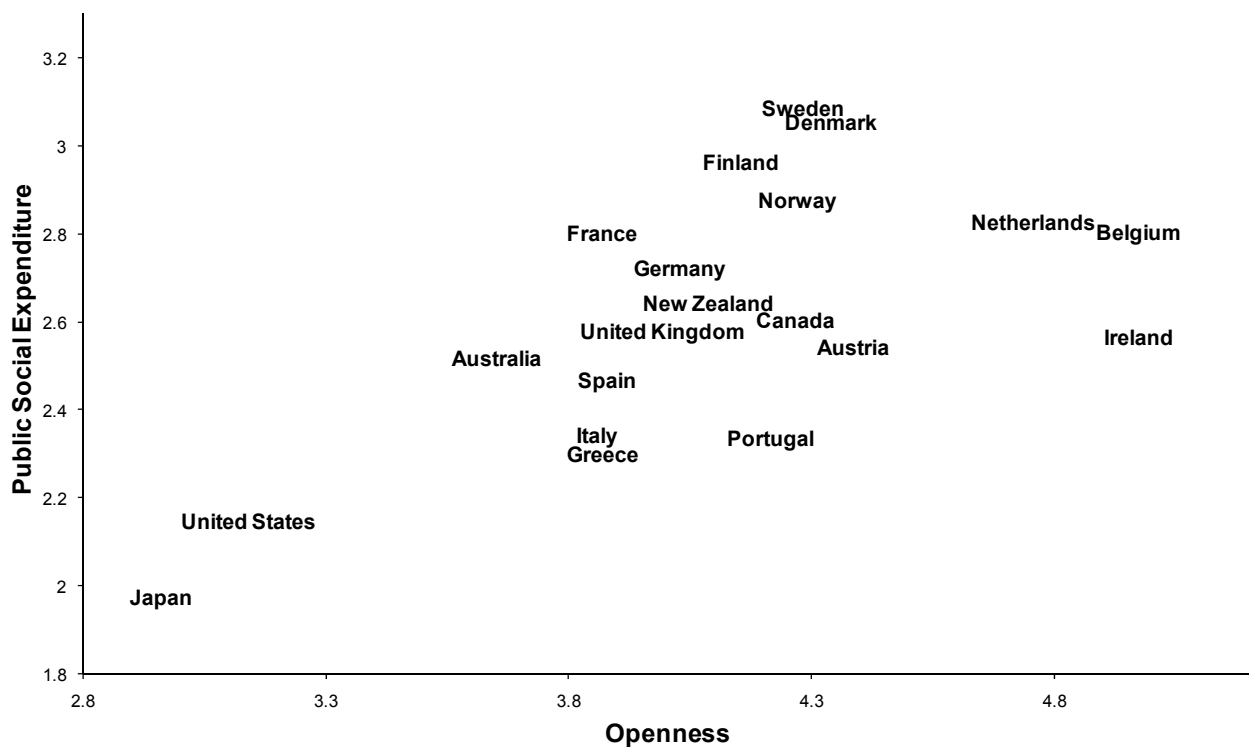


Figure 2: Openness and social spending in advanced countries (Logarithms of imports+exports and of public social expenditure as a percentage of GDP, 1990-2003 averages; see Appendix for sources and definitions).

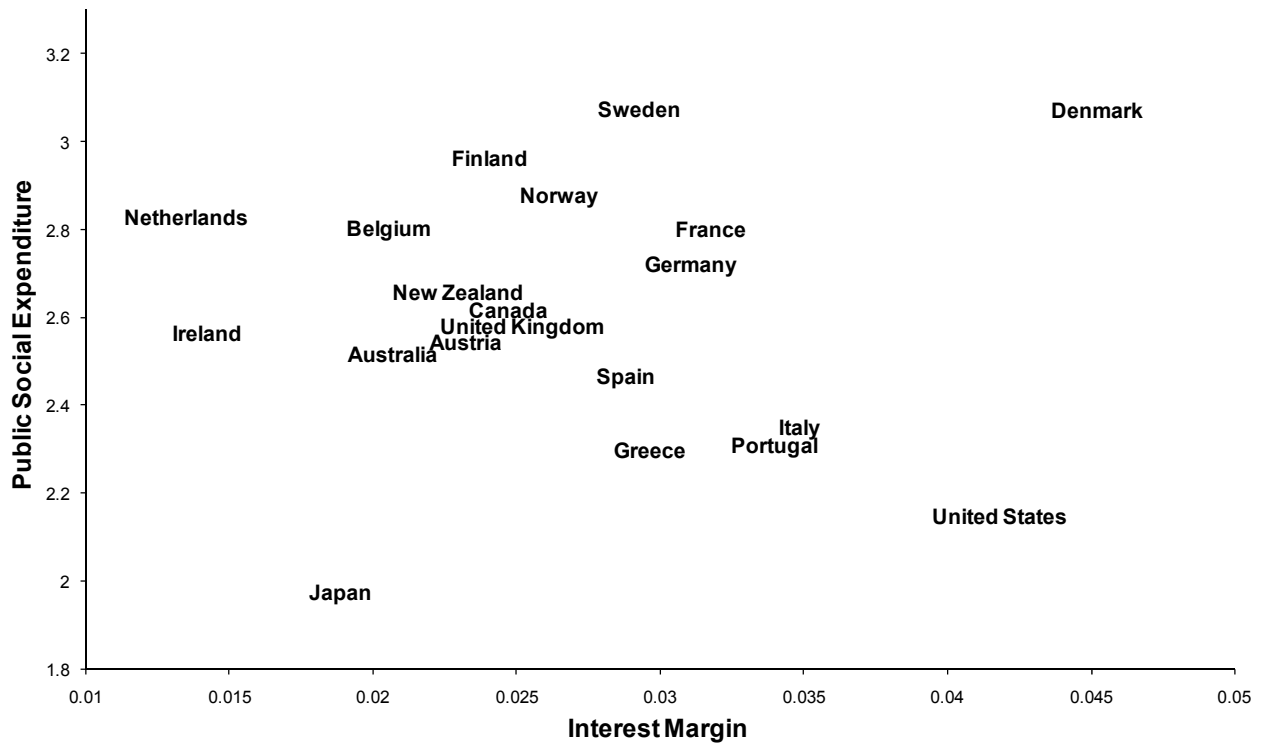


Figure 3: Intermediation margins and social spending in advanced countries (Banks' unit interest margin and logarithm of public social expenditure as a percentage of GDP, 1990-2003 averages; see Appendix for definitions).

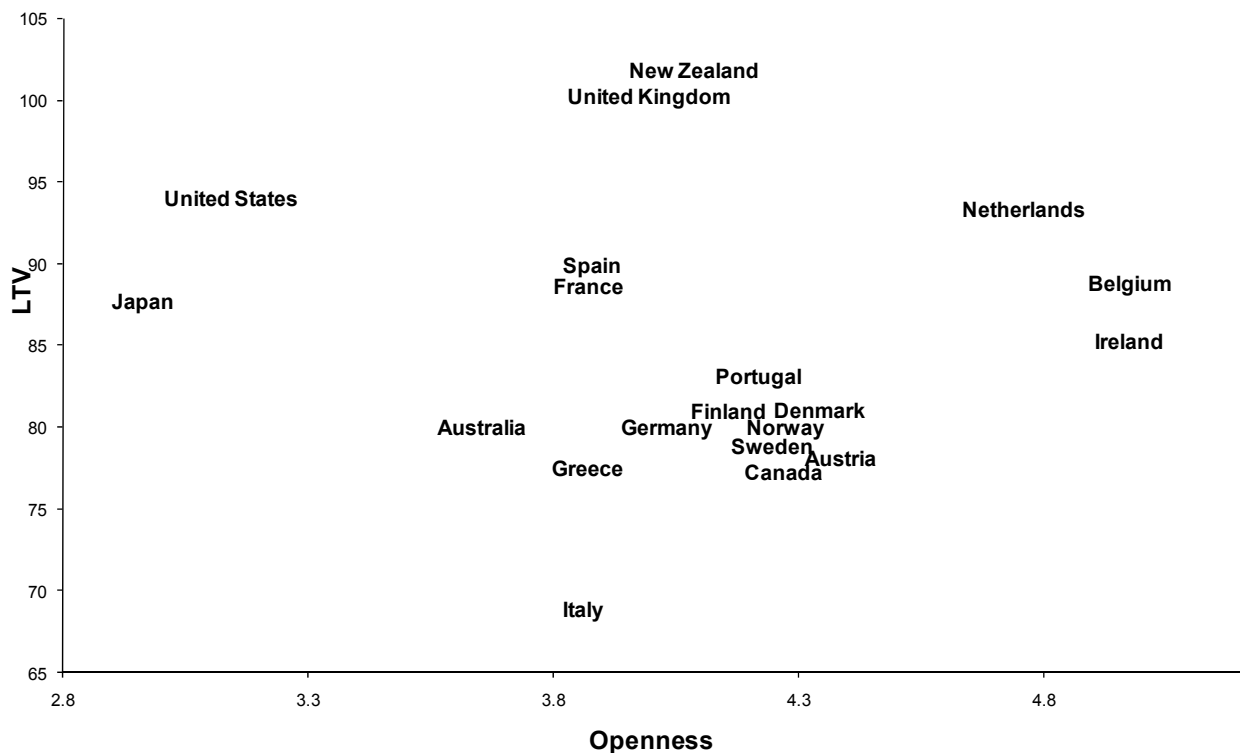


Figure 4: Social spending and mortgage loan-to-value ratios in advanced countries (1990-2003 averages, see Appendix for definitions).

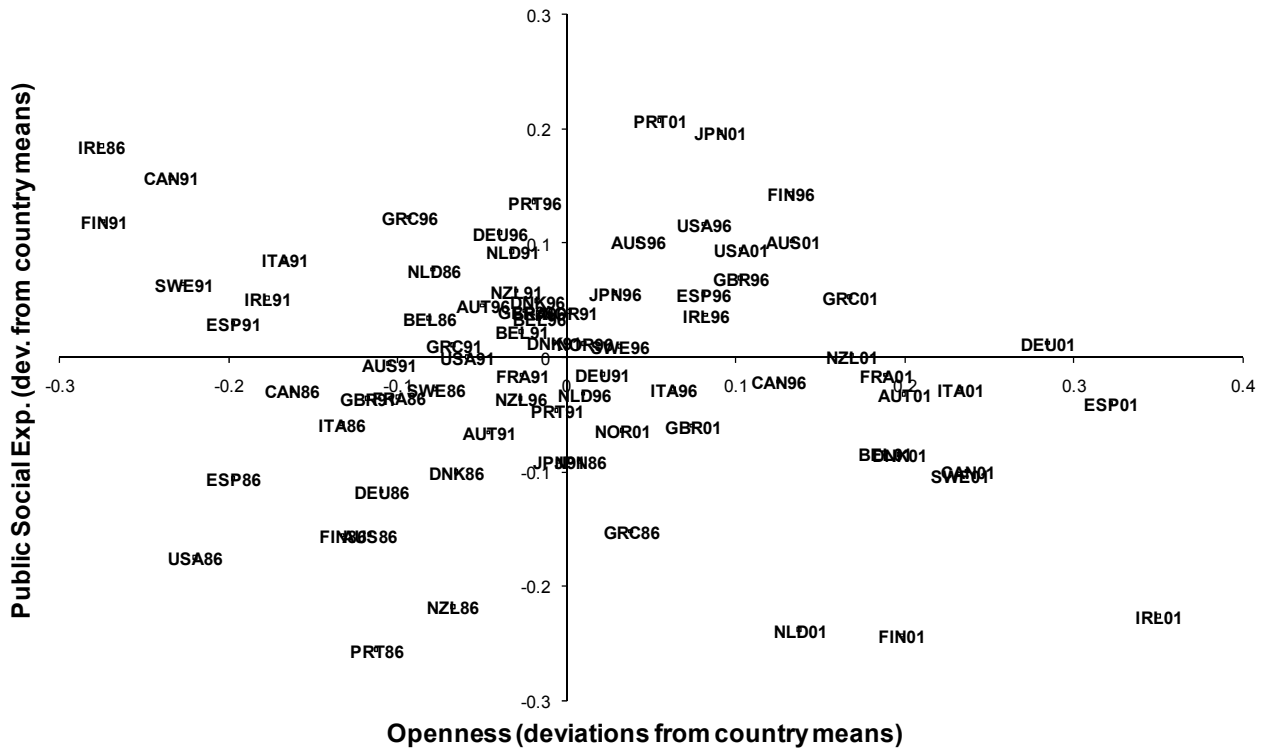


Figure 5: Social spending and openness in advanced countries (units as in Figure 2; available observations of deviations of 1986, 1991, 1996, 2001 data from 1986-2001 country-specific averages; see Appendix for definitions).

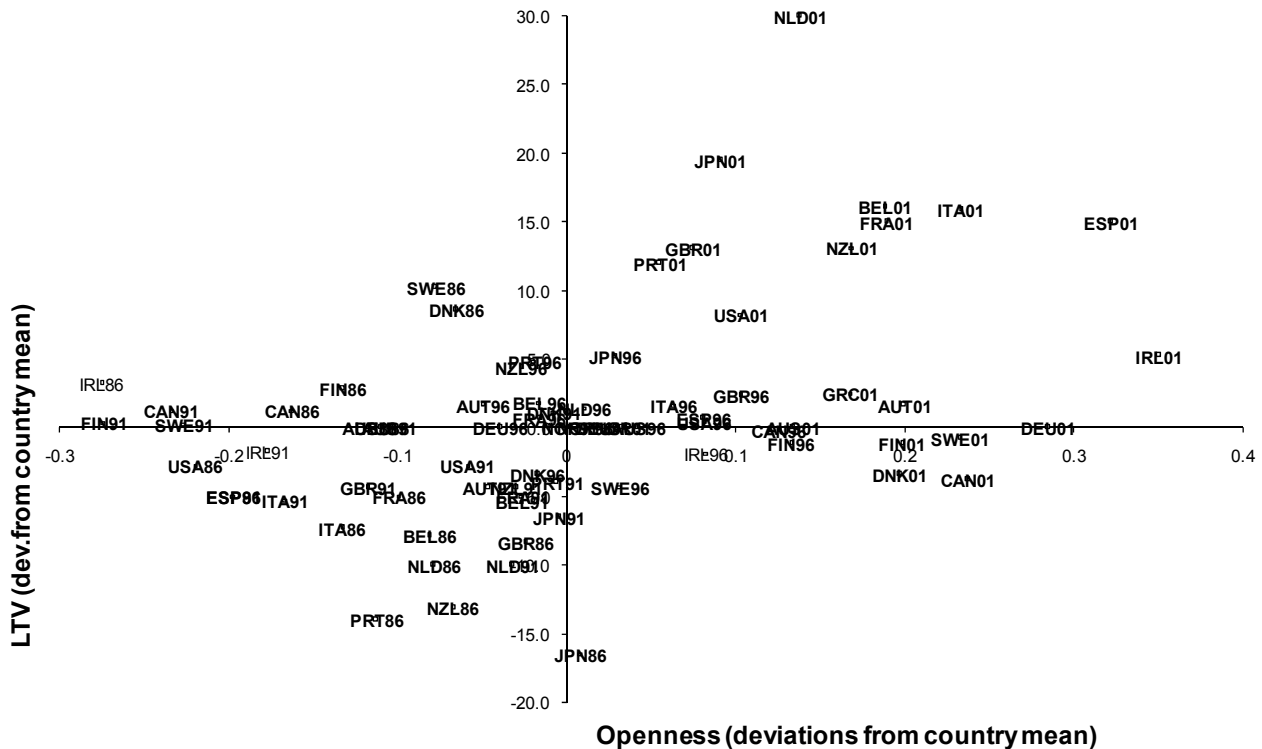


Figure 6: Openness and loan-to-value mortgage ratio in advanced countries (units as in Figure 4; available observations of deviations of 1986, 1991, 1996, 2001 data from the 1986-2001 country-specific averages; see Appendix for definitions).

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