Asset Composition, Insurance and Political Competition

A Formal and Empirical Analysis

Many political economy models explicitly formalize the political preferences of heterogeneous individuals who differ in their factor composition of capital and labor or in income. Such a formalization has produced extremely tractable results and offers an intuitive and rigorous way to analyze how political interests compete and coalesce in democratic countries. However, these analyses for the most part assume that all factors are uniform: that capital assets, for example, are perfectly fungible and homogenous. Such an analysis assumes freedom of movement in capital and labor, international factor price equalization, and discreet and uniform factor composition. These assumptions are, however, somewhat tenuous, given the complexity of asset holdings. In fact, the assets held by individuals can differ greatly in their composition even if, in traditional analyses, a unit of capital or labor is an essentially homogenous factor.

This paper proposes a method of analyzing how political competition might vary depending on the composition of assets held by individuals. I show that, following Williamson, factors can be thought of as varying in their levels of specificity. Some factors are perfectly fungible and can be moved from transaction to transaction without friction or loss of value: portfolio finance provides a typical example. However, the specific nature of many transactions, for example final product manufacturers contracting with the only supplier of a particular intermediate product, mean that if the transactional relation ceases for some reason, the value of assets held based on that relation will suffer. If an individual works for a firms with a high level of specific relationships, or owns
assets dependent on specific transactions, they are at consequently greater risks from exogenous shocks that might affect such transactions than individuals who own only general, perfectly fungible assets. Thus, a broad degree of heterogeneity amongst individuals exists depending on their ratio of specific to general assets. This heterogeneity of asset composition maps directly onto a variance in policy preference over the optimal level of social insurance. Following Alt et al, Rodrik, and Iversen and Soskice¹, this paper shows how, ceteris paribus, an individual with a higher ratio of specific to general assets will demand greater levels of social insurance. The intuition behind this assertion is relatively simple. Because specific assets cannot be transferred to equally valuable alternative uses in the event of an unfavorable exogenous shock, they are inherently far ‘riskier’ than general assets. Given this increased likelihood of a collapse in income for holders of high specificity assets, the provision of an insurance safety-net and a high replacement rate becomes more attractive. Conversely, as the likelihood of an exogenous shock decreases, or as the society-wide asset composition becomes increasingly general, the demand for social insurance will fall.

Given this one-to-one relationship between asset specificity and demand for social insurance we can analyze not only how variation in the probability of shocks or in broader asset composition affect the optimal level of social insurance, we can also

¹ Alt, James, Fredrik Karlsem, Per Heum and Kare Johansen. 1999. “Asset Specificity and the Political Behavior of Firms: Lobbying for Subsidies in Norway”, International Organization, 51.3. notes that firms with more specific assets are likelier to lobby for subsidies as protection from market shocks. Rodrik, Dani. 1998. “Why Do More Open Economies Have Bigger Governments?”, Journal of Political Economy. 106, 5 asserts that economies with higher levels of export intensity (often a sign of asset specificity) have larger governments, especially in terms of social insurance expenditure. Iversen, Torben and David Soskice. 2001. “An Asset Theory of Social Preferences”, American Political Science Review. 95, 4 present a model that demonstrates individuals with higher specific / general asset composition rations prefer higher levels of social insurance.
examine how different political institutions channel demand for insurance in contrasting ways. In this paper I model a state with three distinct sub-regions, which differ in their aggregate levels of factor specificity (high, medium, and low). The distribution of factor specificity amongst individuals is identical in each region but, as is clear from the distinction above, the means of these regions are very different. By examining in turn how the optimal social insurance policy is set under a three-region majoritarian system and under combined district proportional representation, we can distinguish how the structure of political institutions has a significant affect on how social preferences are aggregated. It will be seen that proportional systems lead to higher levels of social insurance than majoritarian systems, the latter leading to systematic under-provision.

This core of this paper begins with an analysis of how asset specificity maps onto preferences for social insurance and examines the relevant literature in political economy. I then outline the shape of the distribution of asset specificity and analyze how a regional election decides on the optimal level of social insurance. I note that this decision is dependent on a threshold level of specificity which matches the expected probability of a future exogenous shock. I draw first order conditions regarding the optimal tax and transfer rate (where all transfers take the form of social insurance) dependent on these probability and specificity parameters. Following my analysis of the regional level I turn to examine how national elections aggregate regional preferences. Firstly, I graph how the separate regional distributions of specificity map onto a broader national distribution. I then analyze two different institutional mechanisms for converting preferences into policy: proportional and majoritarian systems. The proportional system combines all
individuals, no matter the region, into one national election: thus there is a single combined district (as in, for example, the Netherlands). The majoritarian system, conversely, starts with regional votes to elect regional representatives to the national legislature. Once these elections have been held these representatives partake in legislative bargaining to decide the optimal level of social insurance. It is found that the majoritarian institution systematically leads to lower levels of insurance provision. The final section of the paper presents an empirical test of the conclusions of the formal analysis. I test for whether differing aggregate levels of specificity (operationalized as export/import dependence, and R&D expenditures) are associated with higher levels of social insurance. I also examine if higher likelihood of shocks (measured as export/import volatility) are associated with higher levels of social insurance. Finally I incorporate a variable characterizing whether states have proportional or majoritarian electoral systems.

Specificity and Social Insurance – Understanding Preference Formation

Given that the Meltzer-Richard model has been the cornerstone of theorizing preference formation in political economy, it might appear surprising that other academics have reversed its intuition, noting that many individuals with high incomes might actually desire greater public spending. According to the Meltzer-Richard model, as the median voter becomes increasingly poorer than the voter with mean income, we ought to expect higher levels of taxation and redistribution. This appears to be intuitively sensible. After all, poorer voters pay lower absolute amounts in tax and lump sum subsidies become
increasingly valuable the lower one’s pre-tax income. However, many scholars have noted that the Meltzer-Richard model, while formally satisfying, has considerable difficulties in demonstrating empirical evidence for its assertions. How can this model explain countries like Sweden, which have high levels of equality and yet also extremely high levels of government spending?

An alternative model has recently been developed by Karl Ove Moene and Michael Wallerstein, which seeks to explain this apparent ‘anomaly’. According to Moene and Wallerstein, the Meltzer-Richard model fundamentally misrepresents the purposes of public spending. Government expenditure has, in fact, two main segments: redistribution and insurance. Because the Meltzer-Richard model focuses entirely on the former concept, it neglects the key objective of public finance in advanced industrial democracies: hedging against risk. Indeed, very little spending in developed countries is explicitly redistributive, and what redistribution there is largely takes the form of progressive tax credits (i.e. the Earned Income Tax Credit) or, more debatably, public good provision (like education or policing).

A larger part of government spending is actually targeted to ‘insurance’ schemes in their broadest sense. Unemployment insurance is the most obvious example of a government funded insurance device that guarantees a continuation of income for individuals who temporarily lose employment. However, pensions and sickness/disability benefits also play a similar role in that a state pension / benefits provides insurance against the

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possibility of losing one’s ability to privately save if employment is lost. One could stretch this argument further to assert that even publicly provided healthcare plays a similar role in that it guarantees the ability to receive treatment even if employment / income is lost. Since wealthier individuals have correspondingly further to fall if they lose employment they might actually prefer higher levels of social spending (in the form of insurance) than poor voters: a reversal of Meltzer-Richard. This formulation of public finance concurs with the qualitative assessment of authors like Gotha Esping-Andersen and Paul Pierson, who assert that continental European welfare states are targeted toward the professional and middle classes rather than the poor. Thus, we can transfer the focal point of heterogeneity in our formal analyses from picturing ‘self interested voters [who] support welfare policy up to the point at which their gain from income redistribution matches their share of the cost’ to ‘self-interested voters [who] support welfare policy to obtain protection against risks that private markets fail to cover’.

The problem with this formulation is it assumes that income remains the only relevant degree of heterogeneity. However, it is not clear that high income individuals face enough risk of unemployment to allow the insurance motive to dominate public spending. It matters little the magnitude of the income loss rich individuals face if the chance of their becoming unemployed is negligible. Iversen and Soskice have introduced the concept of asset specificity to provide another degree of heterogeneity to the model. They picture individuals as differing in their ratio of specific to general assets, and as confronting a labor market with three states: employment in the specific sector,

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employment in the general sector, and unemployment. Specific skills / assets have a higher market return than general assets: thus as incomes are higher in specific sectors. Ceteris paribus we ought to expect individuals with more specific skills to prefer higher insurance because they stand to lose more income than individuals with general skills if made unemployed. The weakness of this analysis is that it makes no fundamental change to Moene and Wallerstein’s fixation on the heterogeneity of income – rather, it wallpapers over Moene and Wallerstein by subdividing employed individuals into two discrete segments rather than simply keeping a homogenous group of the employed. Thus, Iversen and Soskice fail to get to the root of why asset specificity actually matters as a source of preference. It may, indeed, be true that individuals with higher asset specificity receive a higher income. This, however, cannot be a universal assumption. It fails to depict the labor market and thus the wage rate for specific labor which may be little different to that for general labor. Without a model of the labor market, returns to different kinds of labor are indeterminate. However, we can make one core assumption about the import of specificity: specific assets, by definition, are riskier.

Oliver Williamson, in his renowned work on markets, hierarchies, and relational contracting, notes that the level of specificity in transactions can encourage different forms of relationship organization. In particular, firms will prefer to incorporate certain transactions within the hierarchy of the firm rather than through arm’s-length market exchanges, if those transactions involve highly specific assets and relationships. The possibility of reneging on contracts is particularly worrisome to firms or individuals with specific assets that cannot be transferred rapidly to new uses. Williamson notes in
particular that recurrent and idiosyncratic activities like the ‘site-specific transfer of intermediate product across successive stages’ are especially vulnerable to breakdown since these products are specifically customized and intended for specific locations. Specific assets are thus inherently riskier than general assets because their transferability is less assured. In the event of an exogenous economic shock, we should expect owners of specific assets to be affected worse than owners of fungible general assets, which can be transferred immediately to alternative uses. Thus specificity should not be associated with higher income, as in Iversen and Soskice, but with higher levels of risk. The demand for insurance remains, as in the earlier analyses, but by associating specificity with risk directly we can remove income from our analysis and picture a continuous and heterogeneous distribution of specificity and risk as directly related to preferences over insurance.

Asset Specificity and Regional Elections

In this section I construct a formal model representing a regional (single-district) election where voters differ in their levels of specific/general assets ratio and vote over an optimal rate of social insurance. Because as outlined above, higher levels of specificity correspond to higher levels of risk we can assert, ceteris paribus, that individuals with a higher specific/general assets ration will demand higher social insurance. What does the distribution of specificity throughout the regional population look like? According to Persson and Tabellini, the risks of unemployment tend to be concentrated amongst a

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relatively small fraction of the population\textsuperscript{5}. Their formalization of unemployment risk thus depicts a distribution of individuals that is skewed to the left (where high risk individuals are at the left of the distribution). The distribution of specificity used in this paper shows a similar skew, albeit to the right because more specificity means higher risk. Specificity and risk of unemployment are thus particularly concentrated in a few high specificity individuals, who demand correspondingly high levels of social insurance. Figure One shows the distribution of specificity within the region, \( G(s) \):

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{distribution.png}
\caption{Distribution of Specificity, \( G(s) \).}
\end{figure}

Because we have only one degree of heterogeneity in the distribution of individuals within the region, that of asset specificity, we can apply standard median voter models to discover that the critical individual whose vote will decide the optimal level of social insurance is the median voter (in the figure above, the individual with median specificity). However, just analyzing this figure cannot tell us what the optimal level of

insurance will actually be. In order to calculate this figure we need to analyze the government’s budget constraint and how the threshold probability of unemployment affects the optimal choice of transfers.

Let us picture a two-stage model in which individuals are all employed in the first round but face a particular probability of an exogenous economic shock in the second round. Individuals with increasingly higher levels of specific assets are increasingly more likely to lose their jobs in the event of an exogenous shock. We can think of a threshold level of specificity, $s^*$: all individuals with $s^i$ higher than $s^*$ will lose their jobs if an exogenous shock happens with probability $p^*$. As $p^*$ gets higher, the threshold $s^*$ gets lower and more individuals are likely to lose their jobs. If we normalize the distribution of $s$, so that it is distributed between $\{0, 1\}$, then we can express the critical probability of shocks and levels of specificity as: $s^* = (1-p^*)$ and $p^* = (1-s^*)$. All individuals with $s^i$ higher than $s^*$, now unemployed, will receive a transfer payment, the size of which depends on the number of people still employed (i.e. with $s^i$ lower than $s^*$) and the tax rate $t$. For the sake of analytical clarity we ignore discount factors and assume individuals live only for two periods and value each equally. One further caveat must be added. The following analysis, for simplicity of calculation assumes a uniform distribution of specificity. This, of course, conflicts with my assertions of the importance of skew in the distribution of specificity. The reader should be aware that, although the direction of influence of parameters remains the same, the magnitudes in the following first order conditions are representative of a uniform distribution not a right-hand skew normal distribution.
Individuals have the following welfare function:

\[ v^i = U(c) + [(1 - s^i)U(c) + s^i f] \]

As \( s^i \) increases, individuals face a correspondingly higher probability of being unemployed in stage two (the terms between square brackets). Thus, individuals with very high specific/general asset ratios are more likely to receive the government transfer ‘f’, than to enjoy their previous, employed, levels of consumption. The government budget constraint is defined by \( f = s^*t \), where all individuals with \( s^i \) between 0 and \( s^* \) are employed and paying tax. Given an income normalized at unity, individual consumption for employed individuals is \( c = (1 - t) \). \( U(c) \) is a concave utility function for consumption. Thus incorporating the tax constraint we can adapt the individual welfare function:

\[ v^i = U(1 - \tau) + [(1 - s^i)U(1 - \tau) + s^i (s^* \tau)] \]

Taking a first order condition for individual welfare with respect to tax level:

\[ \frac{dv^i}{d\tau} = -U_c - (1 - s^i)U_c + s^i s^* = 0 \]

Which can be rearranged into:

\[ s^i s^* = U_c + (1 - s^i)U_c \]

The left hand side of this equation shows the marginal benefit of taxation, which increases as the individual’s level of specificity increases and as the threshold probability of an exogenous shock increases. The right hand side of the equation shows the marginal
cost of taxation in first stage consumption and second stage consumption. This can also be transformed into:

\[ U_C = \frac{s^* s^i}{1 + (1 - s^i)} \]

The optimal level of taxation is thus dependent on an individual’s level of specificity, \( s^i \), which increases the desired level of taxation as it increases (because individuals are more likely to be unemployed in the second round), and on \( s^* \), the specificity threshold. As \( s^* \) increases, the optimal level of taxation also increases because more people remain employed in the second round, and thus benefits to each unemployed individual increase. Thus, we have shown that conceiving of a distribution of individuals based around their heterogeneity in asset specificity provides a concise way of demonstrating their preferred social insurance and taxation policy. We can thus assert that the median voter in the region’s preferred level of social insurance will be given by:

\[ U_C = \frac{s^* s^{med}}{1 + (1 - s^{med})} \]

or… \( c^* = U_C^{-1} \left[ \frac{s^* s^{med}}{1 + (1 - s^{med})} \right] \)

or… \( \tau^* = 1 - \left( U_C^{-1} \left[ \frac{s^* s^{med}}{1 + (1 - s^{med})} \right] \right) \)

Comparing Institutional Forms – Proportional and Majoritarian Social Insurance Policy

In the final part of the formal analysis I now analyze the effect that institutional structure has on the resultant social insurance policy. We now turn to a national perspective,
incorporating three regions similar to that just described. These regions have identically shaped G(s) distributions of specificity: the only difference between the regions is that each as a different median level of specificity \( \{s^H, s^M, s^L\} \). How do these regions’ preferences become aggregated into a national social insurance preference? I look first at the majoritarian system before analyzing the difference experience of a proportional (single-district) system.

Majoritarian Systems – Legislative Bargaining

The solution to the majoritarian institution is relatively simple. In effect we have a two-stage game. In the first stage regional elections are called. As in the example above, the median voter of each individual region is the critical voter and political competition will converge onto their preferred policy \( \{s^H, s^M, \text{ or } s^L\} \). In the second stage, elected representatives bargain in the national legislature over the national social insurance rate. We assume perfect commitment, so that these candidates accurately reflect the preference of the median voter of their region and we also assume that politicians are motivated only by policy choice and not by exogenous or endogenous rents. In essence, we pretend that our candidates our actually median voter citizen candidates. Clearly, if these assumptions are broken a number of conflicting results could obtain, so we necessarily keep to this tight analytical structure. Once bargaining commences, a majority of two out of three is necessary to pass a bill.

It is clear that the candidate from the medium specificity district will cast the deciding vote since they must be a part of any coalition. They, in turn, will choose to form a
coalition with the representative who is ‘cheapest to buy’. This choice ought theoretically to depend on the relative distances of the low specificity representative and the high specificity representative from the medium specificity representative. One would assume that the representative whose bliss point is closest to that of the medium specificity representative would be the easiest to pay off. In fact, it is unlikely that this distance really matters since neither the low specificity representative, nor the high specificity representative has any bargaining strength because they both rely absolutely on the medium specificity representative. Thus, in order to buy off a potential partner the middle representative will offer a policy infinitesimally either side of their bliss point just so much as to capture the coalition partner. In practice, the resultant policy from a majoritarian system composed of three districts will be the exact bliss point of the medium specificity candidate and, therefore, that of the median voter in the medium district. It should be noted that this analysis could change if we allow even number of representatives or much larger numbers. In these cases the median representative would still have a strong bargaining position but made need to ally with more clearly with the representatives who are cheapest to buy.

**Proportional Representation – Single District Election**

In the proportional system we combine the three districts (high specificity, medium specificity and low specificity) into one single national district. While not all proportional systems form just one unitary district (although some, like the Netherlands, do), they unequivocally have far less districts than majoritarian systems. To retain analytical
simplicity, however, this paper solely concentrates on the single-district example. How does this differ from the majoritarian system outlined above? Firstly, policies are not decided by legislative bargaining but can be decided by a national vote over social insurance. Secondly, the skewed G(s) distributions of specificity have far more significance in proportional systems. Finally, the variance in medians between the high, medium and low specificity regions can also be critical. By picturing the distributions of the three regions on Figure Two we can gain a clearer picture of this logic:

This figure demonstrates how differently proportional representation systems aggregate national preferences as compared to the majoritarian result. Whereas the majoritarian result leads to the preferred policy of the median voter of the medium specificity district, s^M, the proportional system favors the preferred policy of the national median voter, who has a substantially higher individual specificity than s^M. This leads to a correspondingly higher level of national social insurance. The intuition behind this result is simple.
Because of the right-hand skew of the regional $G(s)$ distributions, when these distributions are combined together the larger amount of individuals with relatively high specificity compared to those with low specificity allows successful cross-regional coalitions of high specificity voters to form. This mimics a result discovered by Persson and Tabellinin in their studies on unemployment: national, or ‘single district’, elections allow coalitions of voters that are under-represented if elections only take place regionally.

Examining Figure Two should make this logic clear. The medium specificity region’s median voter’s preferred policy, $s^M$, is not a Condorcet winner at the national level. This result obtains because a group of individuals in the right-hand skew of the low specificity region’s distribution have levels of specificity higher than $s^M$. However, there is no corresponding group in the left hand half of the high specificity group’s distribution who have specificity lower than $s^M$. Thus, this shaded area in the right hand skew of the low specificity distribution shows the number of individuals whose votes could be won by a slightly higher level of insurance. The optimal level of social insurance is thus a degree higher than the majoritarian result $s^M$, its exact level dependent on the shape of the distributions.

What is the reasoning behind the assertion that the left hand side of the high specificity region is likely to be unskewed? In regions with extremely high specificity, the regional economy is likely to be extremely dependent on the economic health of high specificity individuals (simply because they count for more of the regional population). Those
individuals with particularly low (for the region) levels of specificity are, in fact, still at higher risk of losing employment than individuals with similar specificity in less specific regions. This occurs because every individual in a high specificity region is at threat from an exogenous shock since it spills over throughout the regional economy. Hence we would not expect a left-hand skew of low-risk individuals in a high-risk region as we might for high-risk individuals in a low-risk region.

As noted above, the relative distance between the three regions in terms of specificity is clearly more important in this analysis than in the majoritarian system. If the high specificity distribution is much closer to the medium one, so that the left hand side of the high specificity distribution overlaps $s^M$ and exactly cancels out the right hand skew of the low specificity region, the optimal rate will not vary from $s^M$. As the low distribution becomes closer to the medium distribution we may get increasingly higher levels of social insurance. Applying this model to real world examples, if all districts in a country are highly export-dependent or R&D-dependent, classic examples of specificity, we ought to see higher levels of social insurance. If, however, regions vary greatly in specificity we are likely to see convergence to the medium region’s median policy. Thus the difference between majoritarian and proportional systems may be less exaggerated in nations with a wide variance in specificity. In order to investigate some of these results more fully I provide a brief empirical test of this argument in the following section.
An Empirical Test of the Specificity in Comparative Institutions

This final section of the analysis provides a cursory empirical test of the underlying formal assumptions of this paper. Since the following regressions are based only on 26 OECD countries and do not include a fully specified multivariate model incorporating all relevant variables we should be cautious in extrapolating from the results. As such, the following results should be considered as a ‘plausibility test’ that demonstrates the expected effects of the formal parameters discussed above rather than as a fully fledged econometric analysis. Having presented these caveats there are, nonetheless, a number of interesting results produced by an empirical examination of specificity and social insurance. In particular it can be shown that operationalizing levels of specificity as overall investment in R&D and level of ‘proportionality’ as the number of electoral districts divided by the number of legislative seats produces significant effects on the expected level of social insurance. Before presenting the results, I turn to explain the operationalization of the variables\(^6\).

Independent Variables

Throughout this paper I have noted that we ought to expect an individual’s level of specificity to define their preferred social insurance policy and that as specificity rises the desired policy will increase proportionally. However, how ought one to define

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\(^6\) All data derives from the SourceOECD ‘Main Indicators’ dataset, available online at [www.sourceoecd.com](http://www.sourceoecd.com), except for data on districts per seat taken from LeDuc, Niemi and Norris, eds. 1998. *Comparing Democracies*. All tests are done for the single year 1998. Future research should involve time-series analysis not undertaken in this project.
specificity? This is a more exiguous task than it might initially appear. Williamson thinks of specificity as a characteristic of transactions, so we need to consider the kinds of variables that would demonstrate a relatively high proportion of specific transactions. Two particular variables have been used consistently in the literature: trade dependency and research and development (R&D). The former characterization is hinted at in Rodrik’s recent work, where he asserts that countries who are heavily trade dependent operate in inherently risky markets and thus desire higher levels of social insurance to compensate for this risk. We could think of international trade as involving specific transactions where companies in one country are dependent on the intermediate goods of firms in other states. Exogenous shocks to the global economy can threaten these relationships and there may be no immediate alternative source of satisfactory substitutes: hence the idea of specificity as underlying trade dependency. In my statistical model I have operationalized trade dependency as imports plus exports over GDP.

Another possible operationalization of specificity is the total level of R&D undertaken in states. This is the characterization of specificity used by Alt et al in their study of firms lobbying for subsidies in Norway. The use of R&D makes intuitive sense when one considers that as Acs and Isberg put it, ‘R&D creates asset specificity because firms that sell products with close substitutes are less likely to do research and development’. Thus

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we assume that R&D is undertaken for specific transactions and involves a great deal of specific human capital.

The final key independent variable I analyze operationalizes the earlier formal results analyzing political institutions. In order to model the difference between majoritarian systems and proportional representation systems in a manner analogous to the logic of the formal model I have created a variable measuring the ratio of electoral districts to seats. In majoritarian systems where every district has a corresponding legislative seat this ration will equal one. In a single district state with 150 representatives (i.e. the Netherlands) this ratio equals only 0.00667. Since this latter example is the perfect representation of my formalization of proportional representation and since the United States (ratio = 1) is the perfect example of a formal majoritarian system we have a broad continuum of institutional forms. Although I have only modeled these extreme cases, we ought to expect preferred rates of social insurance for middling institutions to be between those of the pure PR and pure majoritarian systems

Dependent Variables

Two sets of tests are conducted in this analysis: the first uses expenditure on unemployment insurance as a proportion of GDP as the dependent variable; the second utilizes total government spending on social services over GDP. The former more precisely operationalizes the formal model presented in this analysis which considers

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10 The control variable of unemployment rate is also added but it should be noted that this model is far from fully specified and other potentially influential variables should be incorporated into future research.
individuals with high specificity as more likely to lose employment. However, the latter variable is also important because, as noted earlier, many forms of social policy serve ‘insurance’ functions: e.g. healthcare, pensions, sickness benefits.

**Bivariate regression**

Firstly I conducted a bivariate regression with the constituencies/seats ratio as the independent variable and government expenditure on unemployment insurance as the dependent variable:

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<thead>
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<th>Variables Entered</th>
<th>Variables Removed</th>
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_a All requested variables entered._

_b Dependent Variable: Spending on Unemployment Benefits / GDP_

<table>
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<tr>
<th>Model</th>
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<th>Adjusted R Square</th>
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<td>.85559</td>
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_a Predictors: (Constant), Constituencies to Seats_

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<th>Standardized Coefficients</th>
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<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.446</td>
<td>.245</td>
<td>5.909</td>
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<tr>
<td></td>
<td>Constituencies to Seats</td>
<td>-.745</td>
<td>.451</td>
<td>-.320</td>
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_a Dependent Variable: Spending on Unemployment Benefits / GDP_

Although the constituencies / seats ratio is not quite significant at the 90% level, it is still clear from the tables above that the ratio appears influential in determining unemployment insurance. A glance at a scatterplot of this regression reveals the pattern more clearly:
Note that while majoritarian systems (clustering around 1.0 on the x-axis) tend to have low levels of unemployment insurance, there is a broad variance among proportional systems. Our formal analysis earlier should help to explain this. As I noted it is proportional systems with higher overall specificity or similar regions that tend to have higher levels of insurance whereas proportional systems with low specificity or a great degree of variance in specificity tend not to have high levels of insurance (because there is no overlap of high specificity individuals). This qualification may explain the clustering in the scatterplot. There are also a number of outliers. The point furthest to the top right of the scatterplot is one of clearest anomalies. Perhaps unsurprisingly (!) this represents France, which has a majoritarian system but high levels of government expenditure on unemployment insurance. Although the rest of the tests I conduct include
France I show here briefly the resultant bivariate regression when one removes France from the sample:

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<td>Constituencies to Seats(a)</td>
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<td>Enter</td>
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a All requested variables entered.
b Dependent Variable: Spending on Unemployment Benefits / GDP

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<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<td>1</td>
<td>.394(a)</td>
<td>.155</td>
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a Predictors: (Constant), Constituencies to Seats

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<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.482</td>
<td>.241</td>
<td></td>
<td>6.146</td>
</tr>
<tr>
<td>Constituencies to Seats</td>
<td>-.960</td>
<td>.467</td>
<td>-.394</td>
<td>-2.055</td>
</tr>
</tbody>
</table>

a Dependent Variable: Spending on Unemployment Benefits / GDP

It is immediately apparent that removing France from the dataset increases significance to approximately the 95% level. In this regression we see that moving from a pure single district system to one with a majoritarian system reduces the percent of GDP spent on unemployment insurance by a full percentage point: quite a dramatic result.

Multivariate regressions

The bivariate analysis indicates that the formal model outlined earlier may indeed be plausible. However, it is important to include other variables that more fully demonstrate the broader formal mechanism I outlined earlier. Firstly, I incorporate R&D expenditure
per capita and also the unemployment rate (so as to include what may be the key determinant of levels of unemployment insurance expenditure):

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R and D per capita, Constituencies to Seats, Unemployment Rate(a)</td>
<td></td>
<td>Enter</td>
</tr>
</tbody>
</table>

a All requested variables entered.

b Dependent Variable: Spending on Unemployment Benefits / GDP

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.578(a)</td>
<td>.334</td>
<td>.243</td>
<td>.76986</td>
</tr>
</tbody>
</table>

a Predictors: (Constant), R and D per capita, Constituencies to Seats, Unemployment Rate

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>.115</td>
<td>.536</td>
<td>.214</td>
<td>.832</td>
</tr>
<tr>
<td>1</td>
<td>Constituencies to Seats</td>
<td>-.879</td>
<td>.409</td>
<td>-.377</td>
</tr>
<tr>
<td></td>
<td>Unemployment Rate</td>
<td>9.129E-02</td>
<td>.044</td>
<td>.385</td>
</tr>
<tr>
<td></td>
<td>R and D per capita</td>
<td>1.805</td>
<td>.745</td>
<td>.452</td>
</tr>
</tbody>
</table>

a Dependent Variable: Spending on Unemployment Benefits / GDP

This regression appears to generate extremely interesting results. Although there is a clear problem with the intercept (which is statistically extremely vague) the three key independent variables are all significant at the 95% level and have powerful effects. Increasing R&D expenditure per capita by $1000 leads to nearly two percent higher government expenditure on unemployment insurance. Changes in political institutions appear to have a similar effect to that in the bivariate regression and unemployment is significant but not particularly influential on the level of insurance. Next, I add a trade penetration variable:
Here we find that trade penetration is surprisingly (at least considering Rodrik’s well-known results) insignificant and that the constituency/seat ratio has also become less significant. R&D and unemployment remain significant at the 95% level and the size of coefficients throughout remains similar. How are we to explain the failure of trade penetration to produce the expected results? I offer three potential explanations: firstly, it could be that R&D is a much more accurate in expressing specificity than trade penetration but collinearity between the two variables has often led analysts to misattribute importance to trade; secondly, we might find (as Peter Katzenstein hints\(^{11}\)) that the constituencies to seats ratio and trade penetration are highly collinear (I find they have a Pearson correlation coefficient of -.497); finally this could be a failure of the data I have collected and the absence of time series tests in this analysis.

\(^{11}\) Katzenstein, Peter, *Small States in World Markets.*
My final test uses total government spending on social services as a percentage of GDP as the dependent variable, and replicates earlier tests:

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables Entered</th>
<th>Variables Removed</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unemployment Rate, Constituencies to Seats, R and D per capita, Trade Penetration(a)</td>
<td></td>
<td>Enter</td>
</tr>
</tbody>
</table>

a All requested variables entered.

b Dependent Variable: Total social spending / GDP

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.584(a)</td>
<td>.341</td>
<td>.215</td>
<td>5.81043</td>
</tr>
</tbody>
</table>

a Predictors: (Constant), Unemployment Rate, Constituencies to Seats, R and D per capita, Trade Penetration

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>19.766</td>
<td>6.365</td>
<td>.3275</td>
<td>3.105</td>
</tr>
<tr>
<td>1</td>
<td>R and D per capita</td>
<td>12.298</td>
<td>6.050</td>
<td>.225</td>
</tr>
<tr>
<td></td>
<td>Constituencies to Seats</td>
<td>-7.873</td>
<td>3.525</td>
<td>-.456</td>
</tr>
<tr>
<td></td>
<td>Trade Penetration</td>
<td>-4.914</td>
<td>4.599</td>
<td>-.234</td>
</tr>
<tr>
<td></td>
<td>Unemployment Rate</td>
<td>.395</td>
<td>.336</td>
<td>.225</td>
</tr>
</tbody>
</table>

a Dependent Variable: Total social spending / GDP

Here we find that both R&D and constituencies/seats ratio (or specificity and institutions) continue to have statistically significant and sizeable effects on social spending but trade penetration and unemployment become insignificant. The muted effect of unemployment should be unsurprising since we are now looking beyond unemployment insurance; otherwise it appears that we obtain similar results for our key independent variables to those obtained in the last tests.
Conclusion

Although a number of academics in both political science and economics have recently attempted to introduce Oliver Williamson’s formulation of specificity into the public finance literature, the traditional conception has been of specificity as affecting income. This paper attempted to return to the theoretical roots of Williamson’s specificity by concentrating on risk rather than income. Having pictured how specificity is distributed across individuals I then analyzed the consequent preferred level of social insurance of the median voter. Using this formalization I compared how majoritarian and proportional systems aggregate preferences over social insurance, concluding that the latter system tends to produce higher transfers than the former. I tested these conclusions empirically by proxying R&D for specificity and the constituencies / seats ration for institution type and found, in very cursory tests, that such an effect as outlined in the formal model is empirically plausible.

Future work should expand upon both the formal and empirical conclusions of this paper. Formally, more attention should be paid to how the shape of the specificity distribution affects the constrained optimization problem for insurance and research should attempt to formalize more explicitly the structure of other political institutions. Empirical work should broaden the sample I have used to non-OECD countries (noting that the institutional analysis may have to be adapted to non-OECD institutional forms) and introduce a more fully specified model that controls for potentially relevant factors. Despite these caveats I hope to have shown that the structure of political institutions and
their interaction with the manner in which risk is distributed throughout society can have important implications for trends in public finance that are often ignored in political science and economics. By incorporating insights from both traditions we can get a firmer foothold in grappling with the enormous complexity of modern political economies.