Economic Insecurity and the Globalization of Production*

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Preliminary. Comments Welcome.

A common claim in debates about globalization is that economic integration increases worker insecurity. Although this idea is central to both political and academic debates about international economic integration, the theoretical basis of the claim is often not clear. There is also no empirical research that has directly tested the relationship. In this paper, we argue that economic insecurity among workers may be related to deteriorating employment and/or wage interactions with employers, and that foreign direct investment may a key factor contributing to this deterioration. We present new empirical evidence, based on the analysis of panel data from Great Britain collected from 1991-1999, that FDI activity in the industries in which individuals work is positively correlated with individual perceptions of economic insecurity. This relationship holds in yearly cross-sections, in a panel accounting for individual-specific effects, and in a dynamic panel model also accounting for individual-specific effects.

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1. Introduction

Across the world, there appears to be significant opposition to policies aimed at further liberalization of international trade, immigration, and foreign direct investment (FDI). A large number of political events in recent years suggest a marked turn away from liberalization, and many prominent observers have raised alarms about this "globalization backlash."[1]

There is a growing body of research examining what political-economy forces underlie this backlash.[2] In Scheve and Slaughter (2001 a, b), we documented a strong cleavage between labor-market skills and U.S. public preferences over trade and immigration policy. Less-skilled individuals, measured by educational attainment or wages earned, are much more likely to oppose freer trade and immigration than their more-skilled counterparts. We also found that many other possible cleavages, surprisingly, do not materialize. Across both trade and immigration preferences, no other cleavage is as consistently important as the skills divide. Subsequent research has documented this division in preferences about international economic liberalization across a wide number of countries, where the magnitude of the cleavage varies in predictable ways according to national endowments and labor-market institutions (O'Rourke and Sinnott 2001; Mayda and Rodrik 2001; Gabel 1998a, b; Scheve 2000).

In Scheve and Slaughter (2001c) we placed our earlier findings in the context of U.S. wages. The premium earned by more-skilled workers over less-skilled workers has been rising sharply

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[1] Examples of political events include public protests at virtually every meeting of international economic institutions beginning with the 1999 WTO meetings in Seattle. In August, 2000, Federal Reserve Chairman Alan Greenspan acknowledged that liberalization efforts have stalled out, with outbreaks of protectionism a distinct possibility: "'Despite extraordinary prosperity, the ability to move forward on various trade initiatives has clearly come to a remarkable stall … there remains considerable unease among some segments [of society] about the way markets distribute wealth and about the effects of raw competition on society … it is quite imaginable that support for market-oriented resource allocation will wane and the latent forces of protectionism and state intervention will begin to reassert themselves in many countries, including the United States.'" (Stevenson 2000).

[2] See Aldrich et al. (1999a, b), Alt and Gilligan (1994), Anderson and Kaltenthaler (1996), Bailey, Goldstein, and Weingast (1997), Busch and Reinhardt (2000), Cameron (1978), Eichenberg and Dalton (1993), Freeman (1997), Frieden (1991), Friedman (2000), Gabel (1998a, b), Garrett (1998, 2000), Gilligan (1997), Hiscox (1997), Irwin (1994, 1996), Kapstein (1999), Katzenstein (1985), Milner (1987), Quinn and Inclan (1997), Rodrik (1997a, b), Rogowski (1987, 1989), and Verdier (1994) among others.

since the late 1970s. And average real-wage growth in the United States has been very sluggish since the early 1970s. These two facts together mean that less-skilled workers, the majority of the U.S. labor force, have had close to zero or even negative real-wage growth for over a generation. Putting all this together, we argued that the backlash resonates with widespread skepticism among U.S. citizens about globalization, and that these perceptions seem closely connected to the wage pressures that globalization may be imparting on workers.

Although previous research has identified some of the key sources of political conflict over globalization, a number of central questions remain unanswered. Most importantly, debates about globalization frequently involve claims about its impact on individual economic insecurity. The argument most often made is that globalization increases insecurity. Although this claim is central to both political and academic debates, there is no empirical research that has directly tested the relationship. In fact, in many accounts, it is not even clear on what theoretical grounds the claim is made. We argue that determining the connection between globalization and economic insecurity is important for at least three reasons.

First, insecurity speaks to labor-market issues other than the level and distribution of wages. There is by now a very large literature examining the role of globalization—in particular, trade and immigration—on the level and distribution of U.S. income. Most academic research has concluded, however, that increased trade and immigration have *not* been the most important forces driving shifts in real and relative wages.[3] Another important labor-market development—especially during the 1990s—has been rising economic insecurity, measured either in terms of greater earnings volatility, declining job tenure, or self reports.[4] Very few studies examine how

[3] Growth in labor productivity and real wages has been slowest in the service sectors, many of which are nontraded and/or largely domestically owned. And technological change favoring skilled workers seems to have been the major force driving up the returns to skill. For a survey of this literature, see Johnson and Slaughter (2001).

[4] Gottschalk and Moffitt (1994) report substantial increases in year-to-year earnings volatility for the United States over the 1970s and 1980s. Looking at the 1990s as well, a symposium issue of the *Journal of Labor Economics* (1999) documented

globalization may influence patterns of economic insecurity, and those that do use *country-level* data to study this *individual-level* phenomenon (Rodrik 1997a, Iversen and Cusack 2000).

Second, the link between international economic integration and insecurity is central to the literature on the modern welfare state. One of the primary functions of the welfare state, in addition to redistribution, is to provide social insurance (Anderson and Pontusson 2001, Moene and Wallerstein 2001, Iversen and Soskice 2001). Rodrik (1997a), Garrett (1998), and others have argued that while globalization may or may not have affected the ability of nation states to provide generous social insurance, it surely has increased the economic insecurity of individual citizens and thus their demand for insurance. Again, what empirical evidence there is about the connection between globalization and insecurity is based on *country-level* macro-economic data (e.g., Iversen and Cusack, 2000, who claim there is little evidence of this connection). The welfare-state literature is lacking a theoretically informed *individual-level* test of the prediction that globalization generates insecurity and thus for demand compensation via social insurance.

Third, it is interesting to evaluate the determinants of economic insecurity because it is an important indicator of individual welfare. Moreover, it is thought to be a determinant of future health outcomes and of individual political values and policy preferences (Inglehart and Abramson 1994, Inglehart and Baker 2000, Quinn and Woolley 2001, Mughan and Lacy 2001). At the country level, there is even some evidence that economic insecurity undermines democratic institutions and therefore democratic stability (Inglehart 1997).

Determining the link between globalization and insecurity is crucial to a number of debates in the political economy literature. For several reasons, we focus our attention on one particular

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declines in U.S job stability, especially in the 1990s for large groups of workers such as those with more tenure. Within that symposium issue, Schmidt's (1999) analysis of individual surveys finds that U.S. workers in the 1990s were more pessimistic about losing their jobs than they were during the 1980s. A wide range of surveys have found evidence of rising U.S. job insecurity over the 1990s relative to earlier decades, despite the ongoing economic expansion (e.g., Bronfenbrenner 2000).

aspect of economic globalization: FDI. One reason is simply that in recent decades, cross-border flows of FDI have grown at much faster rates than have flows of goods and services or people.[5] Another is that the impact of FDI on labor markets has been much less researched than has the role of trade and immigration. There is also much less survey evidence about FDI policy preferences than about trade and immigration. The relative lack of attention to the impact of FDI on labor markets, attitudes, and preferences is particularly unfortunate because it is the multinationalization of production which a number of scholars have pointed to as the distinguishing feature of the current phase of globalization compared to previous episodes (Bordo, Eichengreen, and Irwin 1999).

In this paper, we clarify the theory of how globalization increases individual economic insecurity in advanced economies. We argue that FDI by multinational enterprises (MNEs) may be a critical mechanism through which globalization generates economic insecurity. In particular, we observe that economic insecurity among workers may relate to deteriorating employment and/or wage interactions with their employers. These ideas can be formalized in standard frameworks of labor economics in terms of either rising elasticities of demand for labor and/or declining profit/risk-sharing opportunities. Greater cross-border flows of FDI by MNEs may be a potent force that can both raise elasticities and lower profit/risk sharing.

Most importantly, this paper provides a direct empirical test at the individual level of the relationship between the multinationalization of production and the economic insecurity of workers. We present new evidence, based on the analysis of panel data from Great Britain collected from 1991-1999, that FDI activity in the industries in which individuals work is positively correlated with individual perceptions of economic insecurity. This relationship holds

[5] UNCTAD (2001) reports that from 1986 through 2000, worldwide cross-border outflows of FDI rose at an annualized rate of 26.2%, versus a rate of just 15.4% for worldwide exports of goods and services. In the second half of the 1990s this difference

in yearly cross-sections, in a panel accounting for individual-specific effects, and in a dynamic panel model also accounting for individual-specific effects.

There are four remaining sections to the paper. The next section provides a theoretical framework for the economics of worker insecurity. Section 3 describes the data to be used in the study and the econometric models to be estimated. Section 4 reports the empirical results and the final section concludes.

2. Theoretical Framework for the Economics of Worker Insecurity

Although there are a number of alternative definitions of economic insecurity, most often it is understood to be an individual's perception of the risk of economic misfortune (Dominitz and Manski 1997). Consequently, researchers have focused on the risk of events such as the loss of health insurance, being a victim of a burglary, losing a job, and significant decreases in wages. Some analysts have distinguished between *perceptions* of the risk of such events and the actual *anxiety and stress* caused by the risk (Anderson and Pontusson 2001, Gardner and Oswald 2001).

For our research this distinction is very important because, as will be discussed below, our key measure of economic insecurity addresses most directly the anxiety/stress dimension. Consistent with many researchers in this area, we will assume that perceptions of risk do generate anxiety, and thus that our stress/anxiety measure is linked to the perceptions of economic misfortune. There are likely individual characteristics and environmental factors that influence this link (OECD 1997, Anderson and Pontusson 2001), and one important task for our empirical analysis will be to address this.

It is likely that most people's perceptions of economic insecurity depend heavily on their purchasing power, which in turn depends on both their asset ownership and their labor-market status—both employment and income earned therefrom. In reality, the large majority of people

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widened to 37.0% versus just 1.9%.

rely much more on labor income than capital income for purchases; accordingly, we think labor-market status is the main determinant of perceptions of economic insecurity.

In light of this labor-market focus, we conjecture that the economic misfortunes underlying people's economic insecurity involve deterioration in employment and/or wage interactions with their employers. At the micro-level, these ideas can readily be formalized in standard frameworks of labor economics in terms of either rising elasticities of demand for labor and/or declining profit/risk-sharing opportunities. We argue that greater cross-border flows of FDI by MNEs may be a potent force that can both raise elasticities and lower profit/risk sharing, and that can thereby foster economic insecurity.

In this section we briefly present the economics of FDI, labor-demand elasticities, and profit sharing. Before doing this, we first want to emphasize that elasticities and profit sharing are two dimensions of labor-force attachment related to but distinct from a third dimension discussed above, i.e., the overall income that individuals earn. This is very important because several studies—of both developed and developing countries—have documented that establishments owned by MNEs pay *higher* wages than do than domestically owned establishments. This is true even controlling for a wide range of observable worker and/or plant characteristics such as industry, region, and overall size. The magnitudes involved are big. Doms and Jensen (1998) document that for U.S. manufacturing plants in 1987, worker multinational wages exceeded domestically owned wages by a range of 5 to 15 percent, with larger differentials being enjoyed by production workers rather than non-production workers.[6]

[6] Production workers receive an average of 6.9 percent less at comparable domestic plants employing more than 500 employees and 15.2 percent less at comparable domestic plants employing fewer than 500 employees. Non-production workers receive an average of 5.0 percent less at comparable domestic plants employing more than 500 employees and 9.5 percent less at comparable domestic plants employing fewer than 500 employees. For additional U.S. evidence see Howenstine and Zeile (1994). Griffith (1999) presents similar evidence for the United Kingdom; Globerman, et al (1994) for Canada; Aitken et al (1996) for Mexico and Venezuela; and Te Velde and Morrissey (2001) for five African countries.

What accounts for this "multinational wage premium" remains unknown, largely because this cross-sectional evidence is consistent with several alternative explanations, about which very little is currently known. The premium could be accounted for by higher worker productivity due to superior technology and/or capital at multinationals; or by higher worker productivity due to unobservable worker qualities; or due to multinationals being more profitable and therefore able to share more rents with workers; or due to compensating differentials due to perceived disamenities related to working for multinationals. Our focus on elasticities and profit/risk sharing will address some of these possibilities.

Regardless of the cause(s) of the multinational wage premium, its existence is very important for considering how individuals think about economic insecurity and MNEs. All else equal, this premium is very likely to make individuals prefer working for MNEs and, thanks to the higher income, make multinational employees feel *more* economically secure. Our focus on elasticities and profit/rent sharing highlights MNE influences on different dimensions of the overall worker-firm relationship. The net impact of MNEs on worker insecurity is *ex ante* unclear. It should depend on how individuals balance the plus of wage premiums against the minuses of greater elasticities and/or less profit and risk sharing. We will need to address this balance of influences, in particular in our empirical work.

2.1 The Economics of Labor-Demand Elasticities and FDI

A firm's equilibrium own-price labor-demand elasticity is defined as the percentage fall in the quantity of labor demanded by that firm in response to a one-percent increase in the price of labor. This elasticity consists of two parts. One is the "substitution effect." It tells, for a given level of output, how much the firm substitutes away from labor towards other factors of production when wages rise. The second is the "scale effect." It tells how much labor demand

changes after a wage change thanks to the change in the firm's output. Higher wages imply higher costs and thus, moving along the product-market demand schedule, lower firm output.

When wages rise, both the substitution and scale effects reduce the quantity of labor demanded. The firm substitutes away from labor towards other factors, and with higher costs the firm produces less output such that it demands less of all factors, including labor. The greater the reduction in quantity of labor demanded for some given wage increase, the more elastic is the labor demand.[7]

Standard models in international trade predict that greater FDI by MNEs should make labor demands more elastic through both the scale and substitution effects. This should make workers feel more insecure, as any given wage increase now generates larger cuts in labor demand and thus greater chances of layoffs for each worker. Consider each of the two effects in turn.

Many models predict that FDI and its related international trade make a country's product markets more competitive. Through the scale effect, this should make labor demands more elastic. For example, liberalization of FDI policies can force domestic firms to face heightened foreign competition. Or developments abroad related to MNEs (e.g., capital accumulation via FDI) can be communicated to domestic producers as more-intense foreign competition. In these cases more competitive product markets mean that a given increase in wages and thus costs translate into larger declines in output and thus demand for all factors. Different models predict different magnitudes of FDI and/or trade's impact on product-market demand.[8]

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[7] For a formal derivation of key labor-demand concepts such as elasticities, see Hamermesh (1993).

[8] One example is a monopolistically-competitive industry producing for Dixit-Stiglitz consumers who value product variety (e.g., Helpman and Krugman, 1985). Here the representative firm is usually assumed to face a demand elasticity (greater than one) that equals the elasticity of substitution (EOS) among product varieties in consumers' utility function. But the actual demand elasticity is only approximately equal to the EOS. It equals EOS plus a second term, $\frac{(1\text{-EOS})}{N}$, where N is the number of firms in the industry. As N rises—thanks, for example, to FDI by foreign MNEs— so, too, does this elasticity.

The second way through which FDI can increase labor-demand elasticities is through the substitution effect. Suppose that a firm is vertically integrated with a number of production stages. Stages can move abroad either within firms as multinationals establish foreign affiliates (e.g., Helpman 1984) or arm's length by importing the output of those stages from other firms (e.g., Feenstra and Hanson 1997). Globalization of production thus gives firms access to foreign factors of production as well as domestic ones, either directly through foreign affiliates or indirectly through intermediate inputs. This expands the set of factors firms can substitute towards in response to higher domestic wages beyond just domestic non-labor factors to include foreign factors as well. Thus, greater FDI raises labor-demand elasticities.

We think that more-elastic labor demands make workers feel less secure: for any given wage increase, firms reduce their quantity of labor demanded by greater amounts. It is important to note that as labor demands become more elastic, policy changes in and/or shocks to labor markets can make workers feel less secure for additional reasons (see Rodrik 1997). One is that higher elasticities shift the wage and/or employment incidence of non-wage labor costs (e.g., payroll taxes) towards labor away from employers. A second is that higher elasticities trigger more-volatile responses of wages and/or employment to any exogenous shock to labor demand.

It is also important to note, as Rodrik (1997) and others have emphasized, that changes in elasticities need not be accompanied by changes in wages. For our purposes, this means that demands could grow much more elastic without any change in the multinational wage premium. Indeed, one possible explanation of this premium may be a compensating wage differential. If workers for MNEs face a greater risk of job separation because MNEs have more elastic labor demands than purely domestic firms do, then to compensate they may receive higher wages.

The Economics of Profit Sharing, Bargaining Power, and FDI

More-elastic labor demands formalize the idea that workers perceive deteriorating employment conditions. But elasticities consider the interaction between workers and firms for some exogenously given changes in wages. To the extent that labor markets are not perfectly competitive, wage changes themselves will depend on the interaction between workers and firms—and thus may be an additional source of worker insecurity. To formalize this idea, we turn to the idea of workers and firms bargaining over profit sharing.

There is a large literature in labor economics that has documented a robustly positive correlation between wages for various micro-units—firms, individuals, union-firm bargaining units—with profits per worker at the level of that micro-unit's firm and/or industry. These profits are interpreted as "prosperity in the product market" enjoyed by firms and available for sharing with workers. This empirical evidence suggests that workers do not earn just their competitively determined marginal revenue product, but rather some amount above that based on negotiations with firms.

The notion of profit sharing between workers and their firm can be easily formalized in a Nash bargaining framework. Consider a situation in which risk-neutral workers enjoy some negotiating power for bargaining with their risk-neutral firm over their wage. In this setting, it can easily be shown that the equilibrium wage depends on three key forces: the outside wage option available to workers (often thought to be the competitive wage); the degree of bargaining power workers enjoy; and the amount of profits per worker available for possible sharing with workers, above and beyond the firm's outside option. The globalization of production through MNEs is likely to affect this equilibrium wage through either lowering worker bargaining power or raising the outside option enjoyed by firms. Consider each in turn.

Most studies of profit sharing simply assume to be constant the key parameter of the bargaining power of workers relative to firms.[9] But in reality, it is very plausible that greater FDI activity for MNEs lowers this power. As discussed above, the globalization of production through FDI gives firms greater access to foreign factors of production, either directly through hiring foreign labor or indirectly through purchasing foreign-made intermediate inputs. It is very likely that this greater access strengthens firms' bargaining position relative to domestic workers. For example, greater access to foreign factors of production may reduce bargaining power by capping the wage firms will pay domestic workers without boosting demand for foreign factors.

Most studies of profit sharing also assume that the firm's outside option is zero; i.e., that without a wage bargain the firm cannot operate and thus cannot earn any profits. This may be the case for a closed economy where a firm has access to only domestic workers. But a multinational firm, by definition, has the option of producing and thus earning profits in more than one country. The more easily an MNE can structure production across countries—e.g., thanks to foreign liberalization of FDI access—the higher its outside option is likely to be. With this escalation of the threat point of firms, workers feel pressure in terms of fewer profits to be bargained over.

Overall, workers are likely to perceive greater economic insecurity from either falling bargaining power over some given amount of negotiable profits and/or falling amounts of these negotiable profits themselves. In either case, workers are likely to perceive deteriorating wage relations with their firms and thus feel less secure.[10]

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[9] For example, Svejnar (1986, p. 1057) motivates his analysis by assuming "an exogenously determined force which affects positively the party's ability to realize a gain over and above the disagreement outcome."

[10] Sutton (1986) presents the basic ideas of non-cooperative bargaining theory, of which the above labor negotiations are an example. Shaked and Sutton (1984) show how labor negotiations can result in involuntary unemployment; there, our notion of FDI by MNEs giving firms more leverage over domestic workers generalizes as the notion that outsiders (for us, foreign factors of production) may represent a greater threat to insiders (for us, domestic workers).

As with rising elasticities, we note that this process can be entirely consistent with multinational wage premia. The evidence on these premia is entirely cross sectional, and cannot rule out the possibility that, while still positive, they have been narrowing over time due to less profit sharing. Even as the nature of profit sharing shifts, MNEs may still pay a higher observed wage for reasons such as superior MNE production technology.

We conclude this discussion of profit sharing by noting that this wage setting obtains from many situations other than Nash bargaining. It can be derived from a perfectly-competitive setting in which short-run labor-mobility frictions make the labor-supply schedule slope upward; or from a labor-contract model in which both workers and firms are risk-averse, and thus optimally share profits in boom times; or from various models of fairness in which not sharing profits is perceived to be somehow unjust (e.g., Blanchflower et al, 1996). The risk-sharing interpretation is particularly relevant for our interest in worker insecurity. Here, the degree of pass-through from profits to wages depends not just on bargaining power but also on the degree of risk aversion of workers and firms.[11]

To summarize, standard economic models of labor markets suggest that the globalization of production via MNEs may both increase labor-demand elasticities and reduce labor bargaining power in profit sharing. And there is empirical evidence that FDI by MNEs actually does generate these labor-market impacts.[12] To the extent that people regard these shifts as changes for the worse, then multinationals may be a force behind greater worker insecurity. Section 3 will provide an empirical test of this prediction.

[11] See McLaren and Newman (2001) for preliminary theoretical research on the link between globalization and risk-sharing.
[12] The idea that FDI by MNEs contributes to more-elastic factor demands has empirical support in Slaughter (2001) and Fabbri, et al (2002). As for profit sharing, Budd and Slaughter (2000) find that the degree of bargaining power over profit sharing varies across nationality of ownership.

3. Data Description and Empirical Specification

3.1 Data Description

The objective of our empirical work is to examine the impact of international capital mobility on economic insecurity. Specifically, we evaluate how individual self-assessments of economic insecurity correlate with the presence of highly mobile capital in the form of FDI in the industries in which individuals work. Our data cover Great Britain, which we think is an excellent case to examine both because inward and outward FDI have long figured prominently in the overall U.K. economy and because of the high quality of data available.

The individual data are from the *British Household Panel Survey* (BHPS) (2001). This study is a nationally-representative sample of more than 5,000 UK households and over 9,000 individuals surveyed annually from 1991 to 1999.[13] It records detailed information about each respondent's perceptions of economic insecurity, employment, wages, and many other characteristics. The most important pieces of survey information required for the analysis in this section is a measure of economic insecurity, identification of the respondents' industry of employment, and repeated measurement of the same individual over time.

We measure economic insecurity by responses to the following question asked in each of the nine years of the panel.

> "I'm going to read out a list of various aspects of jobs, and after each one I'd like you to tell me from this card which number best describes how satisfied or dissatisfied you are with that particular aspect of your own present job—job security."

The ordered responses are on a seven-point scale ranging from "not satisfied at all" to "completely satisfied." As discussed in the previous section, economic insecurity is most often in the literature understood either to be an individual's perception of the risk of economic

[13] The BHPS is ongoing but our data are through 1999 only.

misfortune and/or to be the anxiety or stress caused by the risk. We interpret our BHPS question as measuring the latter concept, as it has individuals report on their (dis)satisfaction with job security rather than on job security per se. We follow previous studies in assuming that perceptions of economic insecurity generate anxiety or lack of satisfaction, and thus that our BHPS question correlates with individual economic insecurity—albeit mediated by individual characteristics and environmental factors.

Using our BHPS question, we constructed the variable *Insecurity* by coding responses in the reverse order from the original question with a range from 1 for individuals who give the response "completely satisfied" to a 7 for those individuals giving the response "not satisfied at all." Higher values of *Insecurity* thus indicate less satisfaction with job security.

Our theoretical framework hypothesizes that high FDI activity in industries may generate economic insecurity among workers in those industries. To test this hypothesis, we constructed the variable *FDI* to measure FDI exposure. We obtained data about inward and outward FDI investment positions in all 2-digit 1992 Standard Industry Classification (SIC92) industries for the UK from 1991 to 1999.[14] Since the BHPS records the industry the respondent is employed in according to the 1980 Standard Industry Classification (SIC80), we concorded the FDI data to 2-digit SIC80 industries.[15] We then merged the industry-level FDI data with the BHPS survey.

The variable *FDI* is a dichotomous variable that we set equal to one if two conditions were met: if the industry had any positive FDI investment, inward or outward, and if the industry's activities do not require producers and consumers to be in the same geographic location. If either of these conditions were not met, we coded *FDI* equal to zero.

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[14] This data was obtained directly from the Office of National Statistics. We thank Simon Harrington for his assistance in generating this data.

[15] The BHPS records industry of employment according to the SIC80 classification scheme in all years but does report this information according to the SIC92 system in two years.

Our logic in defining *FDI* using two conditions runs as follows. The first condition for an individual's industry of employment to have positive FDI investment is straightforward. Any inward or outward FDI activity satisfies this. The second condition recognizes that FDI activity is unlikely to alter labor-demand elasticities or profit sharing if business activities cannot be outsourced across countries because the consumer and producer must be in the same geographic location. Consider the examples of wholesale trade, retail trade, and personal services (e.g., haircuts). The large majority of business activities in these industries require the co-location of producers and consumers: customers interacting with sales clerks, or sitting in the barber's chair. The notions of economic insecurity related to FDI that we discussed in Section 2 depend on the ability of MNEs to shift business activities across countries. In reality, in many industries FDI does not have this characteristic; indeed, this FDI arises precisely because foreign customers cannot be served at a distance via international trade. Accordingly, we construct our *FDI* variable to identify not all industries with FDI, but instead only those industries with FDI in which business activities can be outsourced across countries—and thus in which FDI activity may generate economic insecurity via shifts in elasticities and/or profit sharing. So for industries such as wholesale trade, retail trade, and personal services we coded *FDI* as zero regardless of the data on actual FDI positions.

It is important to recognize the level of aggregation for the *FDI* regressor. The 2-digit SIC80 level used in the analysis is dictated by the FDI data available from the UK Office of National Statistics. Theoretically, we could imagine a more specific FDI exposure regressor that indicated FDI activity at the level of the respondent's company, rather than at the more-aggregated industry level.[16] Our specification implicitly mixes the FDI activity of firms within each

[16] Of course, this is only a theoretical possibility. Even if we had firm-level FDI data, it would not be usable because the BHPS does not ask the respondent's firm.

industry and thereby assumes that within each industry the individual perceives any threat from FDI equally regardless of whether s/he works for a firm with foreign investment activity. This assumption seems reasonable. In high-FDI industries, for example, it is likely that even the employees at purely domestic firms still perceive high FDI presence. This is broadly consistent with the common argument in the profit-sharing literature that wage bargaining keys off of industry profits above and beyond firm considerations.

Given that our dependent variable measures the anxiety generated by economic insecurity, rather than that economic insecurity per se, it is critical that we control for differences among individuals in the link between the risk of economic misfortune and the stress caused by such risk. Previous research has suggested that there is systematic variation in perceptions of economic insecurity across demographic groups.

It is also important that we control for other determinants of economic insecurity. For the issue of MNE-related security in particular, we need to control specifically for individual heterogeneity in balancing FDI's different labor-market impacts. As discussed in Section 2, the net impact of MNEs on worker insecurity is *ex ante* unclear. It should depend on how individuals balance the plus of multinational wage premiums against the minuses of greater elasticities and/or less profit and risk sharing related to FDI. If MNEs do in fact contribute to greater economic insecurity via elasticities and/or profit sharing, then the extent to which individuals self-report anxiety from these forces can vary across individuals as they balance the various labor-market dimensions of MNEs differently when given the BHPS question.

For our baseline cross-sectional analysis, we constructed four standard controls. The variable *Income* is equal to annual household income in thousands of UK pounds.[17] *Education* is a categorical variable ranging from one to four, with higher values indicating increasing educational attainment.[18] The variable *Gender* is equal to one for female respondents and zero for males. Finally, the variable *Age* equals the respondent's age in years at the time of the survey. We consider *Income* to be an especially important variable, as it incorporates any MNE wage premium that may influence the extent of anxiety from FDI-related insecurity.

Although each of these control variables is likely to account for some of the differences among individuals in perceptions of economic insecurity generally and in the link between the risk of job misfortune and the resulting anxiety generated in particular, it must be acknowledged that other unmeasured or perhaps unobservable differences among individuals may matter. For example, individuals almost surely vary in their degree of risk aversion. In addition, individuals probably vary in their interpretation of the BHPS question. One individual may think about job security in compensated terms and assess satisfaction with job security conditional on their wages and any perceived compensating wage differential. Another individual in otherwise similar circumstances may respond without conditioning in this manner.

Unmeasured or unobservable individual heterogeneity is, of course, a problem that faces all survey research but it seems particularly acute in this analysis where our key variable to be explained is answers to a question that permits variation in interpretation. To address this heterogeneity, above and beyond our demographic controls we will exploit the panel structure of our data by including individual-specific effects for each respondent.

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[17] Annual household income is a variable calculated by the BHPS to include income from all sources in the twelve months prior to the September of the survey year as virtually all of the fieldwork for each survey year is done from September to December. The BHPS does impute some data in constructing this variable.

[18] For example, category one indicates no qualifications or still in school and no qualifications, and category four includes teaching qualifications, first degree, or higher degree.

For each year of our panel, Table 1 reports summary statistics of our measure of economic insecurity and explanatory variables. The summary statistics and the analyses reported below are based on the BHPS sub-sample of private sector, full-time workers who are not self-employed. It is for this group of workers that our theoretical framework most directly applies; at the end of this section we discuss the robustness of the results for larger samples. The average score on the insecurity scale is just below 3 in most years, suggesting that the average respondent was fairly satisfied with his or her job security. Table 2 lists the two-digit SIC80 industries in 1991 that satisfied the two conditions for a FDI exposed sector in the construction of *FDI*, our key explanatory variable. These industries both had positive FDI investment and involve business activities in which producers and consumers need not co-locate. Among FDI industries in 1991, the sector with the most respondents in the BHPS was mechanical engineering.

By matching each BHPS observation with the relevant industry FDI information, we examine how self-assessments of economic insecurity relate to FDI activity. Our starting point is to examine cross-sectional variation in economic insecurity for each year of the panel. This cross-section analysis can be formalized as follows,

$$Insecurity_i = \alpha + \beta FDI_i + \gamma Z_i + \varepsilon_i \quad (1)$$

where the subscript i indexes individuals; $Insecurity_i$ is our measure of economic insecurity; FDI_i is our measure of FDI presence; the vector Z_i is our set of control regressors discussed above; α, β, and γ are parameters to be estimated; and ε_i is an additive error term. We treat our measure of individual economic insecurity as a normally distributed random variable, and estimate the parameters in the equation using ordinary least squares regression with heteroskedastic consistent standard errors.

The coefficient estimates of β indicates whether and to what extent individual perceptions of economic insecurity are correlated with FDI activity. Exposure to FDI activity is increasing in the variable *FDI,* and we expect this may be positively correlated with the dependent variable *Insecurity.* This is the central hypothesis of our analysis in this section. Thus, our null hypothesis is that $\beta = 0$, with the alternative $\beta > 0$.

Estimating the effect of FDI on insecurity using period-by-period cross-sectional regressions is, however, inefficient because it fails to take advantage of all the information available in panel data sets (Wawro 2002, Yoon 2000). Pooling the data across the years of the panel has obvious advantages but generates a number of estimation issues regarding individual heterogeneity. Since the same respondents are surveyed over time, it is likely that observations for the same individual will be more similar than observations across different individuals. This might be in part because there is persistence in an individual's perceptions of economic insecurity, or because there are unmodelled characteristics about the individual that cause them to have similar perceptions in each period. This is particularly pertinent to our analysis because, as discussed above, there are good reasons to think that there are unobserved factors that may affect perceptions of economic insecurity. We can model this heterogeneity by revising the cross-sectional equation for the pooled data,

$$Insecurity_{it} = \alpha_i + \beta FDI_{it} + \gamma Z_{it} + \varepsilon_{it} \quad (2)$$

where the variables and parameters are the same as in Equation 1 but now each observation is indexed by *i* and *t,* for individuals and years. Further, α is allowed to vary across individuals to model unmeasured or unobserved heterogeneity across respondents, and *Z* now includes dichotomous indicator variables for each year of the survey.

Equation 2 can be estimated via random- or fixed-effects estimators. The random-effects estimator generates consistent parameter estimates if the individual effects are uncorrelated with the explanatory variables. The fixed-effects estimator is also consistent under this assumption, but is less efficient. Under the alternative hypothesis that the individual effects are correlated with the explanatory variables, only the fixed-effects estimator is consistent. We use both methods to estimate Equation 2, and report diagnostics on the preferred estimator.

Although modeling individual-specific effects is one way of accounting for persistence in panel data, it does not allow us to differentiate between the idea that persistence in observations of insecurity are accounted for by the influence of past experiences of insecurity on present perceptions and the alternative that some types of individuals just have unobserved characteristics that lead them to have certain types of perceptions (Green and Yoon 2002, Wawro 2002). To make this assessment and to verify the robustness of our estimates of β, it is necessary to add a lag of the dependent variable to Equation 2. The final model we estimate is

$$Insecurity_{it} = \rho Insecurity_{it-1} + \alpha_i + \beta FDI_{it} + \gamma Z_{it} + \varepsilon_{it} \quad (3)$$

where ρ is the coefficient on the lag of the dependent variable.

This specification is a dynamic panel model. Introducing a lag of the dependent variable to the equation generates correlation between the individual-specific effects and the lag of the dependent variable. Consequently, this equation clearly cannot be estimated using random effects. Moreover, when the number of periods is small, as in our data, the fixed-effects estimator is also biased and inconsistent in the presence of a lagged dependent variable. Wawro (2002) reviews a number of alternative estimators for this situation, some of which first-difference Equation 3 to deal with individual-specific effects and then use instrumental variables to address the correlation between the error term and lagged dependent variable generated by the

initial transformation of Equation 3. We use the Arellano-Bond generalized method-of-moments estimator, and report diagnostics to evaluate the assumptions required for its valid application.

4. Empirical Results

Table 3 reports the results of our cross-sectional analysis. These results are ordinary least squares coefficient estimates for the parameters in Equation 1, with heteroskedastic consistent standard errors. The key finding is that FDI activity is positively correlated with individual economic insecurity. Holding other factors constant, individuals employed in FDI sectors systematically report less satisfaction with their job security. The coefficient estimate for the variable *FDI* ranges between 0.240 (with a standard error of 0.057) in 1997 to 0.397 (with a standard error of 0.071) in 1993. In every year, the estimated parameter is significantly different from zero at at least the 99% level. Although there is some variation across years in the size of the estimate, in most years it is very close to 0.30 and no trend is evident. Substantively, it generally has the largest effect of any of the regressors. We regard the cross-sectional estimates in Table 3 to be strongly consistent with the hypothesis that FDI activity generates economic insecurity among workers.

The results in Table 3 for the demographic control variables are also of interest. Older and more educated respondents are generally less satisfied with their job security than those who are younger and less educated. The education effect may be related to the "aspiration effect" documented in previous studies of general job satisfaction: more educated workers are thought to expect more from all aspects of their jobs, perhaps including job security. The results also indicate that women are more satisfied with their job security than men. This difference, while statistically significant in all years, declines in magnitude over time. Finally, the estimates in Table 3 indicate an unstable relationship between household income and economic insecurity.

The only statistically significant estimates are negative, consistent with wealthier households being able to self-insure against the risks of job separation and thus more satisfied with their job security. This result, however, holds in only three of the nine years of the panel.

We next pooled all cross-sections to allow us to explicitly model individual-specific effects as in Equation 2. Table 4 reports the results of the random-effects and fixed-effects estimators of this equation.[19] For both estimators, the main substantive finding is, as in Table 3, a continued positive correlation between *FDI* and the dependent variable *Insecurity*. The magnitude of the estimated effect is over twice as large in the random effects specification. Both specifications include a full set of year indicator variables; the coefficients of which indicate whether mean levels of insecurity deviated in each year from the base year 1991. The parameter estimates are negative for every year except 1992, and turn significantly negative after 1995. This indicates that lower average levels of insecurity in later years. It is broadly consistent with the pattern of UK macroeconomic performance over the 1990s: initial recession followed by increasingly strong economic growth.

Although the main substantive story is the same across the two specifications in Table 4, it is still necessary to determine our relative confidence in the two estimators. We employed the Hausman specification test: if the random-effects assumption that the individual-specific effects are uncorrelated with the explanatory variables is true, then coefficient estimates from the two models should not be statistically different. The test statistic is χ^2 distributed with degrees of freedom equal to the number of coefficients (9 in our application) and is equal to 60.75. This

[19] In results not reported, we included the demographic control variables *Gender, Education*, *Age,* and *Income* in the random effects specification and *Education*, *Age,* and *Income* in the fixed effects model (*Gender* is time invariant so cannot be included in the fixed effects model). All the results for the *FDI* parameter are robust to retaining these variables. They were dropped because the parameters for these regressors are all not significantly different from zero in our preferred specification in the dynamic panel reported below.

rejects the null hypothesis that the coefficients do not differ statistically, and suggests violation of the key random-effects assumption. Consequently, the fixed-effects specification is preferred.

It is important to contrast the sources of variation in Tables 3 and 4 that are generating our main finding of a positive correlation between FDI presence and economic insecurity. The cross-section estimates of Table 3 exploit variation across individuals in their industry of employment and economic insecurity at a single point in time. In contrast, the panel estimates of Table 4 identify off of "industry switchers" over time. Individuals who do not change industry of employment and also for whom there is no change in the FDI activity in their industry have their FDI-presence measure fully absorbed by their individual fixed effects. Variation across these individuals was used in Table 3 but is not in Table 4. Instead, identification in Table 4 comes from changes over time in individuals' self-assessments of economic insecurity that occur either with changes over time in individuals' industry of employment and/or with changes over time in FDI activity in individuals' industry of employment.

Table 5 reports the results of our application of the Arellano-Bond estimator of Equation 3. In comparing these results with those in earlier tables, it is important to note that the number of individuals and total observations has declined substantially. First-differencing and the use of lagged instruments results in the loss of the 1991 and 1992 data altogether. It also means that individuals must be retained in the panel for three years to be included in the analysis.

The estimate for the coefficient on the lagged dependent variable, ρ, is equal to 0.199 with a standard error of 0.021. This suggests that past shocks to individual perceptions of economic insecurity do affect current perceptions though the magnitude of this effect is not large. In this sample, persistence in individual economic insecurity depends both on individual-specific

characteristics that make some individuals more likely to have particular perceptions and also on the effect of past perceptions of insecurity on those in the present.

The estimate of the coefficient β is 0.110 with a standard error of 0.049. To interpret, the long-run effect of FDI exposure on economic insecurity, it is necessary to divide this estimate by $1-\rho$ (i.e. 1-0.199). Consequently, the estimated impact of FDI exposure on economic insecurity is 0.137. The magnitude of this estimate is approximately the same as for the pooled fixed-effects estimator reported in Table 4, and it is statistically significant at the 0.05 level. We regard this to be a quite rigorous test of our central hypothesis. A significant correlation between exposure to FDI and perceptions of economic insecurity remains conditional on our controls for individual heterogeneity, for the persistence of perceptions of economic insecurity, and for year-to-year shocks in insecurity.

To assess the validity of the results reported in Table 5, we conducted three diagnostic tests recommended by Arellano and Bond (1991). The consistency of their estimator requires that the errors, ε_{it}, in Equation 3 are serially uncorrelated. Arellano and Bond point out that if this is the case, then the first differenced residuals should display negative first-order serial correlation but not second-order serial correlation. We can reject the null hypothesis of no first-order serial correlation (p-value>0.000) but cannot reject the null of no second-order serial correlation (p-value=0.255). Arellano and Bond also develop a Sargan test to further assess the assumptions about serial correlation. The null hypothesis is that the model's overidentifying restrictions are valid; rejection of the null suggests the need to respecify the model (see Arellano and Bond, 1991, and Wawro, 2002). We do not have evidence to reject the null hypothesis that the overidentifying restrictions are valid (p-value=0.339). Overall, the three diagnostic tests do not

raise significant concerns about the basic assumptions required for valid implementation of the Arellano-Bond estimator reported in Table 5.

To verify our main findings in Tables 3 through 5, we conducted a number of robustness checks. One was to expand our BHPS sample beyond just private-sector, full-time, not-self-employed workers. Our FDI-insecurity correlation maintained in broader samples, but, as expected, in some cases with somewhat smaller magnitudes. A second check for Tables 4 and 5 was to also include our demographic controls. These had no effect on our key *FDI* regressor.

5. Conclusions

A central question in political and academic debates about international economic integration is whether globalization increases economic insecurity. In this paper, we argue that FDI by multinational enterprises may be a critical mechanism through which globalization generates economic insecurity either through higher labor-demand elasticities or lower profit/risk sharing.

We then provide the first empirical test at the individual level of the relationship between the multinationalization of production and the economic insecurity of workers. Our analysis of panel data from Great Britain over the 1990s finds that FDI activity in the industries in which individuals work is positively correlated with individual perceptions of economic insecurity. This relationship holds in yearly cross-sections, in a panel accounting for individual-specific effects, and in a dynamic panel model also accounting for individual-specific effects.

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Table 1: Summary Statistics

	Year								
Variable	1991	1992	1993	1994	1995	1996	1997	1998	1999
Insecurity	2.973	3.026	2.902	2.917	2.881	2.789	2.669	2.663	2.726
	(1.981)	(1.747)	(1.663)	(1.701)	(1.642)	(1.563)	(1.540)	(1.465)	(1.579)
FDI	0.422	0.425	0.612	0.551	0.573	0.625	0.635	0.599	0.582
	(0.494)	(0.494)	(0.487)	(0.497)	(0.495)	(0.484)	(0.482)	(0.490)	(0.493)
Gender	0.350	0.353	0.363	0.369	0.352	0.356	0.345	0.352	0.346
	(0.477)	(0.478)	(0.481)	(0.483)	(0.478)	(0.479)	(0.475)	(0.478)	(0.476)
Education	2.262	2.325	2.399	2.437	2.468	2.511	2.502	2.558	2.539
	(0.898)	(0.893)	(0.898)	(0.910)	(0.905)	(0.901)	(0.887)	(0.870)	(0.877)
Age	35.461	35.563	35.425	35.447	35.644	35.550	35.541	35.809	36.111
	(12.031)	(11.719)	(11.572)	(11.574)	(11.566)	(11.527)	(11.752)	(11.885)	(11.718)
Income	23.776	25.278	25.902	26.486	27.804	29.319	28.727	30.572	30.721
	(13.536)	(14.126)	(13.596)	(14.564)	(15.789)	(16.417)	(16.962)	(20.565)	(22.782)
Observations	2,668	2,385	2,280	2,410	2,377	2,525	3,068	3,060	4,059

Notes: The BHPS sample in each year is private-sector, full-time workers who are not self-employed. Each cell reports the variable mean and, in parentheses, its standard deviation. *Insecurity* takes values from 1 to 7, with higher values indicating greater job insecurity. *FDI* is a dichotomous variable equal to one in industries with FDI presence as defined in the text. *Gender* is a dichotomous variable equal to one for females. *Education* takes values from 1 to 4, with higher values indicating more education. *Age* is age in years. *Income* is household income in thousands of pounds.

Table 2: FDI Industries in 1991

Two-Digit 1980 SIC Industries Designated as FDI-Exposed Sectors for 1991 BHPS Respondents
Agriculture & horticulture
Coal extraction & manufacture of solid fuels
Extraction of mineral oil & natural gas
Metal manufacturing
Chemical industry
Production of man-made fibres
Manufacture of metal goods not elsewhere specified
Mechanical engineering
Electrical & electronic engineering
Manufacture of motor vehicles & parts thereof
Manufacture of other transport equipment
Food, drink & tobacco manufacturing industries
Textile industry
Manufacture of paper & paper products; printing and publishing
Processing of rubber & plastics
Postal service & telecommunications
Banking & finance
Insurance, except for compulsory social security

Table 3: Cross-Sectional Analysis of Economic Insecurity

	Year								
Regressor	1991	1992	1993	1994	1995	1996	1997	1998	1999
FDI	0.318	0.322	0.397	0.274	0.315	0.278	0.240	0.371	0.300
	(0.079)	(0.073)	(0.071)	(0.070)	(0.069)	(0.063)	(0.057)	(0.053)	(0.050)
Gender	-0.296	-0.334	-0.285	-0.336	-0.164	-0.158	-0.114	-0.176	-0.106
	(0.080)	(0.074)	(0.071)	(0.070)	(0.071)	(0.064)	(0.059)	(0.054)	(0.052)
Education	0.059	0.113	0.135	0.078	0.189	0.128	0.044	0.047	0.000
	(0.045)	(0.042)	(0.042)	(0.042)	(0.039)	(0.036)	(0.034)	(0.032)	(0.030)
Age	0.008	0.007	0.011	0.012	0.011	0.009	0.010	0.011	0.010
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003
Income	0.001	0.000	-0.005	0.001	-0.005	0.000	-0.003	-0.002	-0.003
	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Constant	2.536	2.497	2.174	2.230	2.031	2.027	2.161	2.059	2.318
	(0.185)	(0.175)	(0.168)	(0.165)	(0.160)	(0.152)	(0.142)	(0.135)	(0.127)
S.E.R.	1.966	1.726	1.636	1.679	1.619	1.548	1.530	1.444	1.566
Observations	2,668	2,385	2,280	2,410	2,377	2,525	3,068	3,060	4,059

Notes: These results are ordinary least squares regression coefficient estimates for each year for equation (1). Each cell reports the coefficient estimate and, in parentheses, its standard error. For variable definitions, see the notes to Table 1.

Table 4: Panel Analysis of Economic Insecurity, 1991-1999

Regressor	Random Effects	Fixed Effects
FDI	0.221	0.089
	(0.024)	(0.031)
Year 1992	0.069	0.099
	(0.038)	(0.039)
Year 1993	-0.088	-0.024
	(0.039)	(0.041)
Year 1994	-0.065	-0.012
	(0.038)	(0.041)
Year 1995	-0.087	-0.018
	(0.039)	(0.041)
Year 1996	-0.192	-0.124
	(0.038)	(0.042)
Year 1997	-0.294	-0.214
	(0.037)	(0.041)
Year 1998	-0.283	-0.192
	(0.037)	(0.041)
Year 1999	-0.234	-0.165
	(0.036)	(0.042)
Constant	2.832	2.859
	(0.031)	(0.032)
Observations	25,030	25,030
Individuals	7,413	7,413
T	$1 \leq T \leq 9$	$1 \leq T \leq 9$

Notes: Each cell reports the coefficient estimate and, in parentheses, its standard error for equation (2). For variable definitions, see the notes to Table 1.

Table 5: Dynamic Panel Analysis of Economic Insecurity, 1993-1999

Regressor	Arellano-Bond
Δ *Insecurity*$_{(t-1)}$	0.199
	(0.021)
Δ *FDI*	0.110
	(0.049)
Δ *Year 1993*	-0.091
	(0.041)
Δ *Year 1994*	-0.042
	(0.042)
Δ *Year 1995*	-0.001
	(0.041)
Δ *Year 1996*	-0.087
	(0.039)
Δ *Year 1997*	-0.171
	(0.036)
Δ *Year 1998*	-0.093
	(0.033)
Constant	-0.026
	(0.009)
Observations	13,379
Individuals	3,781
T	$1 \leq T \leq 7$

Notes: Each cell reports the coefficient estimate and, in parentheses, its standard error for equation (3). For variable definitions, see the notes to Table 1. The Arellano-Bond estimator is a first-difference estimator so the dependent variable is actually the difference between the *Insecurity* measure in period *t* and period *t-1*.The sample estimated in this table is two years shorter than in Table 4 because two lags are required to estimate the model.