

# Services Offshoring and the Political Responses of Labor:

## The Case of Motion Pictures\*

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### **Abstract**

The offshoring of services has attracted considerable attention in policy debates and the media in the United States, yet the political economy of offshoring remains understudied. This paper examines the labor market effects of offshoring and the political reactions of labor groups in the case of motion picture services. The paper evaluates two hypotheses: first, offshoring tends to harm low-skilled labor, not high-skilled labor, aggravating wage inequality; second, these labor market outcomes place low-skilled labor and high-skilled labor at odds on trade issues. Consistent with the first hypothesis, a bootstrap simulation shows statistically significant increases in wage inequality among motion picture workers as offshoring accelerated. In support of the second hypothesis, an ordered probit analysis reveals that labor groups pursuing trade measures against motion pictures filmed offshore predominantly represent low-skilled occupations. The findings demonstrate that theories of trade lobbying can be usefully applied to offshoring in services. They also challenge popular perceptions that offshoring threatens high-skilled U.S. workers. (13,003 words)

**Keywords:** offshoring; trade in services; wage inequality; labor unions; lobbying.

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## Introduction

Offshoring exploded onto the U.S. political landscape during the 2004 election campaign, as presidential and congressional candidates sparred over how to stem the flight of jobs.<sup>1</sup> But while there is no shortage of policy papers and management consulting reports on the relocation of services offshore, the political economy of offshoring remains understudied. In particular, how does offshoring affect different classes of workers? The answer to this question in turn illuminates important political issues: how do labor groups tend to react to offshoring?

The emergence of the offshoring phenomenon has significant implications for two longstanding debates in international political economy. First, a large literature considers the sources of wage inequality in developed-country labor markets. The consensus of this research is that while trade accounts for part of the growth in wage inequality in the United States and Europe since 1970, the structural shift in these economies toward more skill-intensive services is the main cause of this widening disparity. Empirical studies of wage inequality, however, focus on manufacturing and exclude services.<sup>2</sup> As services are becoming more tradable, it is important to know whether the link between trade and wage inequality extends beyond manufacturing— particularly since trade in services is a crucial feature of globalization today that was not experienced before 1914 or in 1945-1970.

Second, the political responses of trade-exposed domestic groups have been an area of substantial theoretical development and empirical research. Recent scholarship

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<sup>1</sup> “Offshoring” is the movement of part of a production process to foreign locations. In popular discourse, “offshoring” is often used interchangeably with “outsourcing.” However, offshoring refers to the *location of production* (firms choose whether to produce abroad or at home) and outsourcing refers to the *ownership structure of production* (firms choose whether to buy certain goods and services from outside suppliers, or to make the goods and provide the services themselves). See Markusen (2006, 14). Though in practice the distinction can be difficult to maintain, this paper’s focus is the location rather than the mode of production.

<sup>2</sup> Wood (1995, 67-68) and Lawrence and Slaughter (1993, 192) note that data limitations make it difficult to analyze trade and wages in services, despite their growing importance.

has especially focused on the issue of when labor will be united as a class and when it will be divided along industry lines (Rogowski 1989; Hiscox 2002). However, political divisions between classes of labor in the same industry have not received much attention. Even if trade economically divides low-skilled and high-skilled workers, it remains to be seen whether political behavior reproduces these rifts. If the distributional impact of trade in goods effectively explains political responses to offshoring in services, then theories of the domestic politics of trade are more robust than previous work has established.

This paper examines these larger puzzles of how offshoring affects labor markets and shapes the political responses of labor in an analysis of one industry: motion picture services. Three features make motion pictures an informative case. First, motion picture services are critical to the U.S. economy: sales abroad generate huge surpluses— \$12.7 billion in 2002— and the industry’s employment rivals or exceeds that of textiles, apparel, and steel, cases that have received considerable attention in the study of trade and domestic politics. Second, offshoring in motion pictures has grown dramatically in the past decade. With the Internet and advances in telecommunications and computing, it is possible to transport audiovisual content anywhere, instantaneously and with no loss of quality or fidelity, so studios now can physically divide the filmmaking process as never before. Third, while U.S. producers dominate global markets for filmed entertainment, domestic conflicts over offshoring resemble the intensity and rancor seen in more familiar cases in manufacturing. Labor’s reaction in this case allows political divisions to be observed in organized activity.

The analysis has important implications beyond motion picture services because similar outcomes are likely to prevail wherever offshoring is prevalent. Standard trade models predict that in a skilled-labor rich country such as the United States, offshoring, like trade in end products, will benefit abundant factors of production (capital and high-skilled labor) and harm scarce factors (low-skilled labor). As high-skilled workers reap

gains and low-skilled workers incur losses, wage inequality increases. These disparate labor market fortunes suggest that offshoring creates political rifts between classes of labor: low-skilled workers have incentives to seek policy restraints on offshoring, which high-skilled workers are likely to oppose.

The body of the paper evaluates these two expectations. The first part of the empirical analysis examines occupational wage data to determine if increased filming abroad coincided with larger wage disparities for motion picture workers. Consistent with this hypothesis, a bootstrap simulation finds that wage inequality increased, and these changes are statistically significant. This implies that offshoring was skill biased: labor demand stagnated for crew and service labor but not for “creative talent” such as producers, directors, post-production technicians, and the like.

The second part of the empirical analysis uses the labor market effects to explain political mobilization for trade measures to curb offshoring. A coalition of labor groups formed in 1998 to pursue countervailing duties on movies and television programs filmed abroad and Section 301 retaliation against foreign film subsidies, a campaign that many workers in the industry declined to join. If the labor market effects of offshoring are driving this political activity, then the supporters of retaliatory trade measures will be low-skilled manual, service, and crew labor, and the opponents will be the creative talent and other skilled labor employed in the industry. An ordered probit analysis finds that skill differences are indeed a critical dividing factor in collective action on offshoring.

These results are significant because they bolster the theoretical expectations of standard trade models against the popular perception that offshoring now threatens well-educated, white-collar U.S. workers. Past research on trade and wages concludes that high-skilled U.S. workers benefit while low-skilled workers are harmed. Recent accounts of service jobs— particularly occupations using information technology— moving to low-wage countries have upset this conventional wisdom and raised concerns that offshoring in services harms white-collar workers exactly as import competition damages blue-collar

manufacturing labor. Yet most services that move offshore go to other skilled-labor rich countries, and the case of motion picture services corroborates Baily and Lawrence (2004) in concluding that the data do not suggest a large-scale movement of high-skilled service jobs to low-wage countries.

Moreover, the finding that the distributional effects of offshoring produce divisions among labor groups is a novel contribution. The outcome in motion picture services demonstrates that organizations representing low-skilled labor have incentives to use political means to limit offshoring. But while offshoring has impacted workers in many services, organized political campaigns for trade restraints remain unusual. The paper therefore considers the extent to which the experience of motion pictures can be generalized to other services. Though the case has some unique features, protectionism against offshoring is likely to be repeated as long as there is substantial unfulfilled demand for Trade Adjustment Assistant (TAA) in services.

The next section reviews research on the causes of offshoring and its economic effects. The third section presents the hypotheses: first, that offshoring primarily harms low-skilled labor, not high-skilled labor, aggravating wage inequality; and second, that these labor market effects place low-skilled labor and high-skilled labor at odds on trade issues. The fourth section estimates the growth of offshoring in motion picture services. The fifth section evaluates how offshoring affected different classes of labor in motion pictures and finds that wage inequality increased. The sixth section uses these labor market outcomes to show how differences in labor skills created political divisions over trade remedies. The last section discusses the implications for lobbying on offshoring in services generally.

### **Offshoring: The Economics and the Politics**

Offshoring is not a new phenomenon. In manufactured goods such as microchips, cell phones, computers, and automobiles, production routinely involves multiple locations.

Even a Barbie doll undergoes processing in six countries before reaching its destination of final sale (Tempest 1996). An early study of offshoring in manufacturing concluded that as the relative cost of low-skilled U.S. labor increased, firms “began to look to other countries, breaking production into stages and carrying out the labor-intensive processes in countries where wages were low” (Grunwald and Flamm 1985, 10). This research found increased offshoring the more easily that stages of production could be separated, the more labor-intensive the intermediate processes, and the lighter the inputs compared to their value (Grunwald and Flamm 1985).

The distinctive feature that has made offshoring noteworthy of late is its apparent impact on new types of jobs: previously offshoring affected manual labor producing manufactured goods with mature technologies; now service providers are relocating work that requires competence with information technology. The source of this shift is the ease of transmitting voice, data, and images through telecommunication lines and the Internet. Just as twentieth-century advances in freight, shipping, and air travel lowered the cost and time associated with transporting physical goods, recent technological improvements in routing and switching and the advent of broadband, satellite, and computer networks have made the distribution and sharing of information inexpensive. Whereas in the past most services had to be located near the customer, the availability of a global communications infrastructure enables companies to move functions whose outputs can be phoned, faxed, or digitized almost anywhere. As a result, once non-tradable services are becoming exposed to the competitive pressures of the global marketplace (U.S. Government Accountability Office 2004, 10-14).

In the recent wave of attention to offshoring, policy analysts and management consultants mainly have focused on the benefits for specific types of firms and national economies as a whole. There have been a few attempts to evaluate labor markets effects, but poor data and questionable methods plague much of this research. In a widely cited study of company layoffs reported in the media, a Goldman Sachs analyst concluded that

offshoring had claimed 300,000 to 500,000 jobs in the previous three years (Hilsenrath 2004).<sup>3</sup> Other reports have sought to identify classes of service jobs “at risk” of moving offshore (Bardhan and Kroll 2003) and to forecast aggregate job losses in vulnerable occupations (McCarthy 2004).

The distributional effects of offshoring have received less attention. Standard trade models suggest that in a skilled labor-rich country such as the United States, offshoring has the same labor market effects as trade in finished goods: the relative price of inputs declines, depressing home-country demand for low-skilled labor and stimulating demand for high-skilled labor (assuming the processes moved abroad intensively use low-skilled labor). This shift in labor demand creates adjustment costs for low-skilled labor as wages fall and jobs are lost, while high-skilled labor gains higher wages and more employment opportunities.<sup>4</sup> Offshoring therefore produces Stolper-Samuelson results in skilled labor-abundant countries: high-skilled workers gain, low-skilled workers lose.<sup>5</sup>

Empirical studies of manufacturing industries find support for these expectations. Feenstra and Hanson (1996, 1999) conclude that offshoring accounts for 15-40 percent of the change in relative wages for low-skilled U.S. labor in 1972-1990. Feenstra, Hanson, and Swenson’s (2000) analysis of U.S. trade under the Offshore Assembly Program verifies that offshoring has been concentrated in relatively unskilled labor-intensive tasks.

The implications of labor market outcomes for political mobilization on trade

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<sup>3</sup> Schultze (2004) finds that U.S. government data do not corroborate job losses of this magnitude.

<sup>4</sup> Bhagwati, Panagariya, and Srinivasan (2004, 100-101) find that offshore outsourcing redistributes income from low-skilled labor to high-skilled labor in a two-good, three-factor model, but both classes of labor can gain in a three-good, two-factor model.

<sup>5</sup> According to Feenstra and Hanson (1996), Stolper-Samuelson wage effects will prevail in skilled labor-abundant countries but not in skilled labor-scarce countries, because offshored jobs tend to be relatively unskilled labor-intensive in the former and relatively skilled labor-intensive in the latter. As a result, trade due to offshoring worsens wage inequality in both developed and developing countries.

issues have not been fully developed, however. Many studies focus on antagonism over offshoring between labor and capital. Helleiner (1977) and Bergsten, Horst, and Moran (1978) attribute organized labor's protectionism in the 1970s to rising imports from the foreign affiliates of U.S. multinationals. Destler (1998) examines the growth of labor union lobbying against open trade in the last thirty years. Moran (1999) discusses labor union complaints that offshoring has "hollowed out" U.S. manufacturing. Chase (2003) explains how offshoring to Mexico and Canada created rifts between labor unions and multinational companies in lobbying on the North American Free Trade Agreement.

Yet to date there have been few analyses of political divisions among classes of labor. The next section begins to fill this gap by presenting an analytical framework to illuminate the political economy of offshoring.

### **Analytical Approach: Distributional Effects and Political Responses**

Studies of the political economy of trade lobbying begin with the distributional effects of trade, which are specified in economic models. These distributional effects then provide a foundation for developing hypotheses about the political responses of organized groups (Frieden 1999). This section addresses these two issues in sequence.

#### *Distributional Effects of Offshoring*

Feenstra (1998, 32) states that "the fundamental importance of [offshore] outsourcing" for wages and employment "is still not recognized." Like the replacement of manual labor with machinery, offshoring "has a qualitatively similar effect on reducing the demand for unskilled relative to skilled labor within an industry as does skill-biased technological change" (Feenstra 1998, 41).

In standard trade models, policies that facilitate offshoring create two kinds of labor market problems for low-skilled workers in skilled labor-rich countries. First, as the previous section discussed, offshoring shifts labor demand at the industry level from

low-skilled workers to high-skilled workers. This reduces relative wages for low-skilled labor and raises relative wages for high-skilled labor.<sup>6</sup> Offshoring therefore produces changes in compensation that favor high-skilled workers and harm low-skilled workers. Moreover, distributional conflict due to offshoring does not depend on the mobility of labor between industries because intermediate goods trade shifts labor demand within the industry that is offshoring production.

Second, as Rodrik (1997, 36) emphasizes, the ability to shift production offshore means that “employers can move abroad, but employees cannot.” The substitutability of domestic and foreign labor increases the elasticity of demand for low-skilled workers in the domestic market. As a result, marginal differences between countries in wages, benefits, or working conditions may cause production to move to areas where labor costs are lower. This exit option undermines labor’s negotiating leverage and makes it more difficult for workers to bargain for wage increases, better benefits, or improved working conditions. Thus, Rodrik (1997, 55) concludes, “capital mobility exacerbates the risks to which immobile groups are exposed.”

In this representation, production moves to foreign areas where unskilled labor-intensive processes can be performed more cheaply, causing domestic demand for low-skilled labor to decline and demand for high-skilled labor to increase. In the case of motion picture services, it should be noted, classes of labor differ in their geographic mobility because producers, directors, star actors, and other creative talent can travel anywhere for filming, while low-skilled workers such as production crews, cast extras, and service providers tend to be hired and employed “on location.” The geographic mobility of certain forms of high-skilled labor may accentuate– or at least quicken– the labor market outcomes that standard trade theory anticipates.

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<sup>6</sup> Again, this assumes that low-skilled foreign workers are substitutes rather than complements for low-skilled domestic labor. If offshoring instead increases the demand for low-skilled domestic labor in skilled-labor rich countries, then the wage effects will be reversed.

The observable implication for motion picture services is that offshoring will shift employment away from low-skilled occupations and toward high-skilled occupations. Low-skilled workers will experience less demand for their services and stagnant wages, while high-skilled workers will enjoy greater demand for their services and better wages. Because of these labor market effects, the distribution of wages will become less equal in the industry.

### *Political Responses to Offshoring*

Theories of political activity by trade-exposed domestic groups predict that labor and capital will divide over trade when factors of production are mobile and unite when factors are industry-specific. For modern societies with highly specialized productive assets, this suggests that labor and capital will cohere on trade issues. For example, Magee, Brock, and Young's (1989, chap. 7) analysis of Congressional testimony on the 1974 Trade Act finds that trade associations and labor unions adopted the same position in nineteen of twenty-one industries. Hiscox (2001) questions these tests but still concludes that low factor mobility has produced industry-based coalitions in recent U.S. trade politics. In studies spanning multiple countries over long time periods, Rogowski (1989) and Hiscox (2002) analyze trends in trade-related cleavages between labor and capital. However, political divisions between classes of labor— as distinct from labor and capital— are an unexplored topic, and the implications of offshoring specifically for political cleavages over trade have not been extensively studied to date.

The distributional effects of offshoring provide expectations about the political responses of different types of labor. Because offshoring benefits high-skilled workers and harms low-skilled workers, the former have incentives to support policies that assist offshoring and the latter have incentives to support policies that limit offshoring. High-skilled workers therefore will tend to seek policies that open the domestic market to offshored goods and services, while low-skilled workers are likely to push for policies

that close the domestic market to offshored goods and services. Moreover, if labor skills drive trade preferences, then workers with different skills— even those that are joined in the same unions— will have to form separate lobby groups to advance their trade interests.

The observable implication for offshoring in motion picture services is that low-skilled workers are likely to organize politically to lobby for trade measures that restrain imports of offshored goods and services. If an encompassing organization does not exist to advance the interests of low-skilled workers in the industry, one will be formed. High-skilled workers, on the other hand, will tend to align with capital in opposition to barriers against imports of offshored goods and services.

### **Offshoring in Motion Picture Services**

The impetus for services offshoring is the ability to transmit data, voice, and video using telecommunications and the Internet. Just as innovations in information technology have made it feasible to move customer call centers, billing, and other back-office operations to foreign locations, these same advances have revolutionized how filmed entertainment is made. Audiovisual content shot on film or videotape now can be converted to digital form, stored on computers, CD-ROM, or DVD, and transmitted at low cost, without loss of quality or fidelity, via broadband, satellite, or phone lines (Clough 2000, 19).

To understand how new technology has facilitated offshoring, it is necessary to distinguish three phases in motion picture production: pre-production, production, and post-production. Pre-production includes developing the script, preparing the budget, choosing the location for filming, and hiring the principals and cast. Production is the shooting of the film: as Scott (2002, 961) puts it, “an intense period in which large numbers of workers are mobilized in directing, acting, camera-operating, and numerous allied functions from set construction to lighting and make-up.” Post-production involves editing the picture and sound, recording the soundtrack, creating visual special effects, and other processes to prepare a feature film or television program for exhibition.

With the advent of digital compression, it is easier to functionally separate the production phase from pre-production and post-production. Clough (2000, 21) explains, “[t]he use of digital cameras and the growth in the bandwidth available to transmit video instantaneously is making it much easier for directors, editors, and their collaborators to work together even while being thousands of miles apart.” Today film production occurs in a movable factory, as specialized inputs are shifted across many geographic locations before, during, and after filming. Directors, producers, actors, and other specialists can be transported to the location of shooting, and then the raw images and sound sent over the Internet for editing and post-production elsewhere.

Because the completion of the different tasks involved in making a feature film or television program no longer require physical proximity, there is more leeway for studios and producers to shoot where direct costs are lowest— even in remote locations that would have been unimaginable before the Internet. Studios face intense pressure to maintain profit margins with escalating production and marketing costs due to higher expenses for star actors and screenwriters, reliance on television advertising and, for the larger feature films, “saturation releases” in thousands of theaters simultaneously. In this competitive environment, there are strong incentives for film production to move abroad to hold down costs (U.S. Department of Commerce 2001, 62-65).

In addition, different phases of the process of making a feature film or television program vary in skill intensity. Pre-production and post-production generally use more high-skilled workers and pay the highest wages. With the introduction of technologies such as computer-generated visual effects and digital compositing, post-production has become particularly intensive in the employment of engineers and skilled technicians. Offshoring therefore occurs mostly in production, specifically the shooting of film.

Production, to be sure, requires skilled professionals trained in photography, lighting, sound, art, and design, and may involve high salaries for producers, directors,

lead actors, and other “above-the-line”<sup>7</sup> creative talent. But production overall is a labor-intensive process employing large numbers of “below-the-line” workers— carpenters, electricians, painters, prop builders, costume designers, seamstresses, make-up artists, caterers, drivers, mechanics, security guards, and the like. These workers perform highly specialized (even if not highly skilled) tasks, as the fixed investment to become an expert pyrotechnician, animal trainer, or dental special-effects artist may be large. Below-the-line labor tends to be hired locally because workers with undifferentiated skills can be found in most major population centers (U.S. Department of Commerce 2001, 9-10). Moreover, competitive pressure on studios to maintain profit margins focuses cost cutting on variable, below-the-line expenses. This creates strong incentives to move low-skilled production functions offshore, while keeping pre-production and post-production in the United States.

The first step in the analysis is to determine how much offshoring has been occurring in motion picture services. Trade data allow baseline estimates, because feature films and television programs shot abroad must be returned to the United States for post-production and preparation for delivery to theaters and television stations.

#### *How Much Motion Picture Production Occurs Offshore?*

Trade statistics reveal a surge in U.S. imports of motion picture goods and services,<sup>8</sup> consistent with increased offshoring. The total amount of offshoring is not large in the context of the entire industry, but it has increased rapidly, reaching 2.5 percent of revenues for production and distribution in 2001, compared to 2.2 percent in 1999 and

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<sup>7</sup> “Above-the-line” refers to fixed expenses for the principals and the script; these expenses are committed before production begins to pay the scriptwriter, producer, director, and star actors. All other variable costs in production are included “below-the-line.”

<sup>8</sup> It is necessary to examine data for both services and goods because motion picture services can be delivered in a physical package as a good (a film, tape, or disk) or electronically as a pure service (via satellite, cable, or the Internet).

1.2 percent in 1996.<sup>9</sup>

Starting with trade in goods, U.S. motion picture imports increased from \$105.5 million in 1996 to \$300.2 million in 2004. While the proportion of imports that offshore production comprises is not reported, Canada's growing share of these imports, shown in Figure 1, suggests that offshoring has increased significantly. Total motion picture goods imports from Canada increased fourfold from \$61.4 million in 1996 to \$262.4 million in 2004. After 1998, U.S. imports from Canada expanded at an annual rate of 27.2 percent.

Figure 1. U.S. Imports of Motion Picture Goods, 1996-2004

Traded services reveal larger amounts of offshoring than traded goods, although placing dollar amounts on this trade requires some estimation. Table 1 displays Bureau of Economic Analysis (BEA) data for U.S. payments to "unaffiliated foreigners"<sup>10</sup> for motion picture services.<sup>11</sup> Total payments abroad to finance motion picture production costs increased from \$274 million in 1996 to \$633 million in 1999. Of this amount, payments to foreigners to finance the production costs of motion picture films increased from \$207 million to \$355 million, and payments to foreigners to finance the production costs of broadcast program material increased from \$67 million to \$278 million. In 2001, payments for motion picture services were \$782 million, of which \$481 million was for motion pictures and \$301 million for broadcast program material.<sup>12</sup>

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<sup>9</sup> Reliable production figures that exclude distribution revenues are not available due to the U.S. Census Bureau's reporting methods for integrated producers and distributors, which make up the bulk of revenues.

<sup>10</sup> "Unaffiliated foreigners" refers to foreign firms that neither own nor are owned by the U.S. company that made the purchase.

<sup>11</sup> These data are "miscellaneous disbursements" in payments to unaffiliated foreigners for "other business, professional, and technical services." For sources, see Table 1.

<sup>12</sup> The figures for 2001 are estimates based on more aggregated values. Actual values could be as much as 7 percent higher or lower for motion pictures and 12 percent for broadcast program material. The assumptions and procedures employed are available from the author on request.

Table 1. U.S. Imports of Motion Picture Services, 1996-2001

The BEA data do not provide corresponding figures for payments to affiliated companies for services abroad. The U.S. Department of Commerce (2001, 19) reports that “industry observers believe that payments to unaffiliated companies are probably over 80 percent of total payments for film production.” Following this assumption, Table 2 displays estimated payments to affiliated companies in row 3, payments to unaffiliated companies (from Table 1) in row 2, and imports of motion picture goods (from the data for Figure 1) in row 1. Adding these figures yields total imports of \$1.14 billion in 2001 (2.5 percent of industry revenues), \$930 million in 1999 (2.2 percent of revenues), and \$448 million in 1996 (1.2 percent of revenues).

Table 2. U.S. Imports of Motion Picture Goods and Services as a Share of Revenues, 1996-2001

The figures in Table 2 are the best estimates of motion picture offshoring that current data allow. The U.S. Government Accountability Office (2004) reviews survey and measurement issues in the data on services trade. According to Bosworth, Brainard, and Collins (2004, 1), “[g]iven current surveying methods... the potential magnitude in underestimating import levels... is significant.”<sup>13</sup> In the case of motion pictures, there are three reasons why the figures in Table 2, notably the estimated payments to affiliated companies in row 3, may undercount how much offshoring is occurring. First, motion picture services often are supplied digitally over broadband or satellite, and transfers of

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<sup>13</sup> Baily and Lawrence (2004, 250-252) also report statistical discrepancies between BEA data and surveys by India’s National Association of Software and Service Companies.

information in cyberspace are more difficult to record than movements of products across customs checkpoints. This problem downwardly biases all data on services offshoring, Kirkegaard (2004, 24) explains, because “trade in services requires, unlike trade in goods, no physical package to cross borders, frequently has no description of content, or information on quantity, origin or destination, and critically has no administrative system based on customs duty collection measuring it.”

Second, the assumption that payments to unaffiliated foreigners account for 80 percent of all payments abroad for motion picture services cannot be empirically verified. In the broader category “other business, professional, and technical services,” which contains miscellaneous disbursements to fund production costs for motion picture films and television programs, payments to unaffiliated companies ranged from 22.9 percent to 26.6 percent of total payments in the years 1996-2004. This implies that payments to affiliated companies for motion picture services may be larger than the estimates in Table 2. It is also possible that the share of payments to affiliated companies has grown with the creation of virtual private networks. Thus, it is impossible to precisely determine how much U.S. studios have paid affiliated companies abroad for their services.

Third, the estimate of \$930 million for motion picture offshoring in 1999 falls short of the Monitor Company’s (1999) conclusion that the state of California lost \$2.8 billion to runaway production in 1998. The Monitor study used the number of U.S. productions filmed abroad and the budgets for those films to calculate how much “economic runaways”<sup>14</sup> would have spent if they had remained in California.<sup>15</sup> This method estimated runaway production at three times higher than the total amount of motion picture offshoring in U.S. trade statistics. Even assuming, generously, that filmed

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<sup>14</sup> “Economic runaways” are filmed productions that move abroad to achieve lower production costs. These are contrasted with “creative runaways,” which move abroad to attain a particular artistic ambiance.

<sup>15</sup> The Monitor study estimated that runaway production also cost California \$5.6 billion in indirect spending, \$1.9 billion in tax revenues, and 20,000 jobs in 1998.

productions in California cost 40 percent more than if they had been done abroad, the difference between the two estimates is \$1.07 billion— 2.6 percent of revenues in 1998.

In short, offshoring in motion picture services definitely has increased since 1996. The magnitude of this increase cannot be precisely quantified, but gaps in coverage in the data on trade in services suggest that the actual amount of offshoring is higher than official figures reveal.

Data and measurement issues aside, the discernible level of offshoring and its rapid rate of increase in recent years are likely to have important effects on labor in motion picture services. Offshoring can exert significant wage pressure on specific job classifications, even if the total amount of production moved offshore is small in the context of the entire industry. The next step in the analysis is to determine whether the offshoring of motion pictures has affected wages and inequality in the industry.

### **Wage Inequality in Motion Picture Services**

This section examines the extent to which increased filming abroad has coincided with growing wage inequality between high-skilled and low-skilled workers. The analytical approach presented earlier anticipates that offshoring has the same Stolper-Samuelson effects as trade in finished goods. If high-skilled and low-skilled workers in motion picture services have experienced divergent fortunes during the period that offshoring has accelerated, then labor market outcomes are likely to create political divisions on trade issues between different classes of labor.

Empirical studies of trade and wages in manufacturing typically look for evidence of structural shifts in labor markets, such as changes in the wage share of non-production labor, rather than analyzing wage inequality directly. Whether the proxies used in this research are good measures of labor skills remains debatable; in any event, there is no basis to distinguish production and non-production labor in services. The analysis in this section therefore seeks more definite evidence of wage inequality in the distribution of

wages for different types of work.

The analysis employs the Occupational Employment Statistics (OES) dataset of the Bureau of Labor Statistics (BLS) to evaluate trends in wage inequality in motion picture services. The OES program conducts a biannual survey to estimate occupational employment and wages at the industry level. Each panel surveys approximately 200,000 establishments<sup>16</sup> to collect payroll data on all full-time and part-time workers, and each establishment is surveyed at most once every three years.<sup>17</sup>

The units of observation for the analysis are Standard Occupational Categories in Standard Industry Code 7810, “Motion Picture Production and Allied Services.” The Standard Occupational Classification (SOC) system contains 821 detailed occupations organized by six-digit codes. For example, “Producers and Directors,” an occupation essential to motion pictures, are classified in SOC 27-2012. Of the 821 detailed SOC occupations, the number appearing in the data for motion picture services ranges from 99 in 1999 to 134 in 2001.<sup>18</sup>

One problem with the OES data is that many motion picture employees perform freelance work on a project basis, yet independent contractors and other self-employed workers are not covered unless their establishment is included in the survey. In addition, certain contract work is assigned to other industries: for example, independent artists, writers, and set builders appear in Standard Industry Code 8999, “Services Not Elsewhere Classified.” The size of these two groups (self-employed workers and workers assigned

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<sup>16</sup> “An establishment is the physical location of a certain economic activity, for example, a factory, mine, store, or office.” Frequently Asked Questions, BLS, [http://www.bls.gov/oes/oes\\_ques.htm#Ques2](http://www.bls.gov/oes/oes_ques.htm#Ques2).

<sup>17</sup> Overview of the OES program, BLS, [http://www.bls.gov/oes/oes\\_emp.htm](http://www.bls.gov/oes/oes_emp.htm).

<sup>18</sup> The data also include a handful of broad occupations (of which there are 449 in the SOC system) where the BLS deemed the group too small to further disaggregate into detailed occupations. In the previous example, for instance, SOC 27-2012, “Producers and Directors,” is the detailed occupation; SOC 27-2010, “Actors, Producers, and Directors,” is the broad occupation. For an overview of the SOC system, see “Standard Occupational Classification (SOC) User Guide,” BLS, <http://www.bls.gov/soc/socguide.htm>.

to other industries) as a share of total employment is not known. But the incomplete coverage of OES surveys suggests that low-skilled workers are likely to be undercounted, which could bias the estimates of wage inequality.

Another problem is the discontinuity in the dataset with the change from Standard Industry Codes to the North American Industrial Classification System in 2002. In this transition, a number of employment activities allied to motion picture services were assigned to other industries, while distribution activities such as movie exhibition and videotape rental were added to motion picture services. As a result, the post-2001 classification is less representative than before. Moreover, these redefinitions prevent comparisons between 1997-2001 and 2002-2004. The analysis therefore examines 1997-2001 and finds evidence of increased wage inequality in this period. After a discussion of measurement issues, the section presents the results of these statistical tests.

### *Measuring Inequality*

Measuring inequality is not a simple task. As Cowell (2000, 89) explains, “inequality... is not self-defining.” Inequality is a property of a distribution of a resource— payment for work in the form of wages, in this case— and inequality measurement is designed to allow comparisons of wage distributions. Probably the most popular inequality measure is the Gini coefficient. However, the Theil index is preferable on theoretical and empirical grounds when the units of observation have been aggregated into groups, as generally occurs with compensation data due to confidentiality requirements.<sup>19</sup> The analysis

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<sup>19</sup> An empirical appeal is that bootstrap estimates of standard errors tend to be nearer to their asymptotic values for the Theil index than for the Gini coefficient (Mills and Zandvakili 1997, 148). Theoretically, Cowell (2000, 150) notes that the Gini coefficient, unlike the Theil index, is not additively decomposable (that is, changes in inequality cannot be separated into “between group” and “within group” effects). However, both the Gini coefficient and the Theil index fulfill two other desirable characteristics of inequality measures: they are scale invariant, so proportionate changes in wages (due to inflation, for instance) do not change overall inequality; and they satisfy the principle of transfers, which means that an

therefore employs the Theil index to measure inequality in wage distributions.

The Theil index  $T$  is given by the equation:

$$T = \frac{1}{n} \sum_{i=1}^n \left( \frac{y_i}{\mu} \log \left( \frac{y_i}{\mu} \right) \right) \quad (1).$$

Where:  $n$  is number of people in the population;  
 $y_i$  is the wage of the person indexed by  $i$ ;  
 $\mu$  is the average wage of the total population.

This general formulation treats all observations equally. If the units of observation are groups rather than individuals, then the index can be weighted by the size of each group such that:

$$T = \sum_{i=1}^n \left( \frac{p_i}{P} \left( \frac{y_i}{\mu} \right) \log \left( \frac{y_i}{\mu} \right) \right) \quad (2).$$

Where:  $p_i$  is the population of the group indexed by  $i$ ;  
 $P$  is the total population of all  $n$  groups;  
 $y_i$  is the wage of the group indexed by  $i$ ;  
 $\mu$  is the average wage of the total population.

In both equations, the lower bound is normalized to  $T=0$  when each person (or group) earns the same wage. The upper bound, when one person earns all of the wages, is  $T=\log(n)$  in equation 1. This becomes  $T=\log(P/p_i(\min))$  in equation 2, or the log of the total population divided by the population of the smallest group. In each case, larger values for  $T$  mean higher levels of inequality in the wage distribution.

The data analysis that follows uses the general formulation in equation 1. While both equations produce similar results for the Theil index in a given year, there are three reasons to prefer the unweighted version for comparisons across years. First, inequality

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earnings transfer from a lower-wage to a higher-wage individual increases inequality, and vice versa (Cowell 2000, 109-110).

measurement in equation 2 gives unusually large weight to SOC 27-2011, “Actors,” because this is by far the largest occupational group (one-quarter to one-third of the sample). Second, variability in employment across groups produces larger standard errors in equation 2, and the statistical significance of changes in inequality over time declines accordingly. Third, equation 2 drops an unacceptably large number of observations due to missing data because several occupational groups include data for wages but not employment. The general formulation in equation 1 therefore allows a more comprehensive analysis of inequality trends across the entire industry.

### *Data and Results*

The statistic of interest in this part of the analysis is the measurement of inequality in the distributions of average hourly wages. Table 3 displays the Theil index with standard errors and lower and upper bounds for 1997-2001. The results show that wage inequality was lowest in 1998. Wage inequality then increased in 1999 and 2000 before leveling off in 2001.

Table 3. Theil Indices of Inequality in Wages for Motion Picture Services

The increase in the Theil index over time is apparent in Table 3, but it is not clear whether these changes reflect an actual increase in wage inequality or random variation in the sample. Observed changes in inequality measures are unambiguously significant when the confidence intervals around the different estimates do not overlap. In Table 3, the upper bound for the Theil index in 1998 (0.096) extends beyond the lower bound for 2000 (0.083) and 2001 (0.084). Thus, additional hypothesis testing is needed to determine whether these differences are statistically significant from zero (Mills and Zandvakili 1997, 139-140).

The method employed is a bootstrap test of equality of yearly Theil indices  $T$ . As

Mills and Zandvakili (1997) and Biewen (2002) explain, the bootstrap method re-samples from the data some large number of times (1,000 replications in this analysis) to estimate the difference of two Theil measures,  $D_T = T_1 - T_2$ . The resulting bootstrap distribution allows a confidence interval for  $D_T$  to be calculated. If zero does not fall within this confidence interval, then  $D_T$  is statistically significant at the specified level.

Table 4 displays the results of the bootstrap simulation for four paired Theil measures: 1997-1998; 1999-2000; 1999-2001; and 2000-2001. These figures show that the decline in the Theil index from 1997 to 1998 is not significantly different from zero. Though the statistical significance of the growth in wage inequality from 1998 to 1999 cannot be determined,<sup>20</sup> increases in wage inequality from 1999 to 2000 and 1999 to 2001 are statistically significant at the  $p < .01$  level. Wage inequality then levels off at this higher level from 2000 to 2001.

Table 4. Bootstrap Test of Equality of Theil Indices

In sum, this analysis of wage inequality in motion picture services finds statistically significant increases in wage inequality in the period when offshoring was accelerating— specifically from 1999 to 2000 and 2001. In empirical studies of wage inequality, the challenge is identifying the effects of trade separate from other factors, such as technological change. Without question, greater use of computers and the Internet coincides with the growth of offshoring and wage inequality in motion picture services. Because the method of evaluating changes in inequality does not allow for the

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<sup>20</sup> The OES survey shifted its occupational classification system to SOC codes in 1999. As a result, observations in the 1997 and 1998 surveys are not strictly comparable to observations for 1999 and after. Because the bootstrap method assumes (and corrects for) longitudinal correlation and panel attrition in the sample, observations for different years must be paired in the re-sampling. Year pairs for which individual observations are not comparable are marked “n.a.” in Table 4 for “not applicable.”

inclusion of control variables, a causal link between offshoring and wage inequality is difficult to establish. But it is not clear that the distinction between trade and skill-biased technological change is substantively meaningful in the case of offshoring: technological change directly affects the distribution of wages by raising the relative importance of skilled technicians; at the same time, it facilitates offshoring and the consequent increase in imported inputs intensive in the use of low-skilled labor. The results support the first hypothesis, that offshoring produces larger wage disparities between workers of different skill levels, even if offshoring is not easily disentangled from technological changes that have observationally equivalent effects.

The findings also bolster the expectation that offshoring is likely to affect political behavior. Because different occupations are affected differently, some workers will have incentives to seek policy measures to limit offshoring, while others will have incentives to oppose restraints on offshoring. The next section statistically evaluates the hypothesis that occupational skill levels are a critical dividing factor in lobbying activity on policies toward offshoring.

### **Trade Lobbying in Motion Picture Services**

This section employs ordered probit models to demonstrate that political pressure to block offshoring in motion picture services has drawn support primarily from low-skilled workers, while high-skilled workers have opposed measures against offshoring or taken no position in policy debates. After a brief account of the political campaign for countervailing duties and a Section 301 trade complaint, the analysis describes the variables and methods and presents the results of the statistical models.

#### *Political Activity against Runaway Production*

Recent political activity against runaway production dates to 1998, the year that Canada's federal government and several provinces expanded tax credits for locally-filmed motion

pictures and television programs. In Hollywood in December 1998, an out-of-work production designer formed the Film and Television Action Committee (FTAC), a non-profit “social welfare” organization under Internal Revenue Code 501(c)(4).<sup>21</sup> FTAC is a single-issue group whose “sole purpose is to keep all aspects of film production in the United States” (Joseph 2001, 3). FTAC held its first major event in April 1999, a “Bring Hollywood Home” rally in Burbank’s Johnny Carson Park that drew 1,500 motion picture workers (Pollack 1999). In August 1999, an estimated 5,000 people joined an FTAC-organized march down Hollywood Boulevard to protest runaway production.

FTAC stepped out of grassroots organizing and into direct political activity in December 2001, when it filed a petition for countervailing duties on film and television productions entering the United States from Canada. The petition alleged that Canadian federal and provincial subsidies had materially injured producers in the United States of three categories of film and television programs: feature films for release in theaters; television and cable television movies and movies of the week; and television and cable television series.<sup>22</sup> The petition further asserted that Canadian tax credits for film and television productions were illegal bounties under U.S. trade law and the Agreement on Subsidies and Countervailing Measures in the World Trade Organization (WTO) because the subsidies were specific to motion pictures.

Under Section 702(b) of the Tariff Act of 1930, petitioners for countervailing duties must have the support of at least 25 percent of all domestic producers or workers in

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<sup>21</sup> IRC 501(c)(4) allows exemption for “civic leagues or organizations not organized for profit but operated exclusively for the promotion of social welfare.” Under this provision, “an organization is operated exclusively for the promotion of social welfare if it is primarily engaged in promoting in some way the common good and general welfare of the community.” Reilly, Hull, and Allen 2003, I2-I3.

<sup>22</sup> In addition to films and videotapes in these categories (HTS 3706.10), the petition listed imports of digital video disks (HTS 8524.52.10, 8524.52.20, 8524.53) “if used to circumvent duties on films and video tapes.” “Correspondence Filed by Joel D. Joseph, Made in the USA Foundation,” USITC Investigation 701-427, 18 December 2001, U.S. International Trade Commission, <https://edis.usitc.gov/hvwebex>.

the industry and at least 50 percent of the domestic producers or workers in the industry that formally express a position on the petition.<sup>23</sup> To satisfy these statutory requirements, FTAC needed labor and industry groups to join its cause. In its filing, FTAC cited the support of 135,875 of the film industry's 268,635 workers—barely 50 percent. FTAC achieved this level of support through the backing of the 118,000-member Screen Actors Guild (SAG). Five locals of the International Brotherhood of Teamsters and the Studio Utility Employees Local 724 of the Laborers International Union provided an additional 5,875 supporters. Finally, FTAC claimed the support of “more than 12,000 individuals employed in the film and television industry” who were not members of any of the co-petitioning organizations (Joseph 2001, 3-5).

The FTAC filing had to cite the backing of unidentified persons because the industry's larger labor unions, other than SAG, would not formally endorse the cause. Notably, the 101,000-member International Alliance of Theatrical and Stage Employees (IATSE) defeated a resolution to condemn foreign subsidies and endorse countervailing duties at its July 2001 convention, as the IATSE leadership objected on behalf of its 12,000 Canadian members.<sup>24</sup> Other groups such as the Producer's Guild of America (PGA), the Director's Guild of America (DGA), and the American Federation of Television and Radio Artists (AFTRA) criticized the petition as counterproductive to their lobbying efforts to secure wage-based tax credits from the U.S. Congress and the California State Assembly.<sup>25</sup>

Five weeks into the investigation, FTAC withdrew its countervailing duty claim

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<sup>23</sup> “Title VII of the Tariff Act of 1930, Updated through Public Law 103-465 (Uruguay Round Agreements Act— 12/8/94): Countervailing and Antidumping Duties,” U.S. Department of Commerce, <http://ia.ita.doc.gov/download/title7.txt>.

<sup>24</sup> Correspondence with Jeffrey Burman, Board of Directors for IATSE Local 700, Motion Picture Editors Guild.

<sup>25</sup> The FTAC petition claimed that though the IATSE and DGA leaderships opposed countervailing duties, a majority of the members of these organizations supported them. Joseph 2001, 10.

because it lacked the information to complete a U.S. International Trade Commission questionnaire in the stipulated time frame. FTAC leaders vowed to strengthen and resubmit the petition (Simon 2002). But the group quickly shifted its focus to pursuing a Section 301 filing in the hope that a U.S. Trade Representative investigation would lead the United States to initiate a dispute against Canadian film and television subsidies in the WTO.<sup>26</sup> With the help of a \$100,000 donation from the International Brotherhood of Teamsters, FTAC retained the Washington, DC, law firm Stewart and Stewart to prepare its Section 301 petition (Vaucher 2004).

FTAC previewed its new strategy in a June 2004 letter to the Unfair Trade Practices Task Force.<sup>27</sup> The letter highlighted subsidies to film and television production in “Canada, Australia, and other foreign countries,” but it emphasized Canadian tax credits as the precedent that others would emulate. Canada’s production incentives, FTAC asserted, “suddenly and substantially reduced the cost of Canadian below-the-line labor, making it less expensive for American studios to make their products in Canada with Canadian crews and supporting actors.” As a result, the United States was “in imminent danger of suffering permanent, irreversible damage to [its] world-renowned film industry” (FTAC 2004, 1, 8, 20).

FTAC also expanded its base of support among film industry unions. Two international unions, the International Brotherhood of Teamsters and the Laborers International Union of North America, signed on to its campaign, and the Teamsters made a sizable financial contribution, as noted earlier. Though the IATSE International did not change its stance against trade measures to block runaway production, six IATSE

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<sup>26</sup> “The Section 301(a) Filing,” FTAC, <http://www.ftac.net/html/301a.html>; and “FTAC Reveals Blueprint for Victory,” Press Release, 2 June 2002, FTAC, <http://www.ftac.org/html/2-ftacstewart.html>.

<sup>27</sup> The U.S. Department of Commerce invited public comment on the newly created Unfair Trade Practices Task Force in a May 2004 notice in the Federal Register and received fourteen responses, twelve of which were filed by producer groups in various industries. “Request for Public Comment: Unfair Trade Practices Task Force,” U.S. Department of Commerce, <http://ia.ita.doc.gov/download/utptf/utptf-cmts-index.html>.

locals joined the FTAC campaign. A seventh IATSE local filed a letter of its own with the Unfair Trade Practices Task Force and then in a June 2005 “Resolution on Runaway Production” endorsed a Section 301 petition against Canada.<sup>28</sup> FTAC also gained the support of three other union locals in the industry.

Yet to date the FTAC campaign has produced no trade policy measures to combat foreign film subsidies or penalize U.S. studios for filming abroad. Its countervailing duty petition was abruptly withdrawn, and its Section 301 filing remains to be submitted. Though FTAC has served as a focal point for organizing film industry workers seeking to stop runaway production, it has not mobilized enough political pressure to effect policy change, a puzzle that the paper revisits in the next section.

### *Probit Analysis of FTAC Support*

The pattern of union support for and opposition to the FTAC campaign against runaway production provides the dependent variable for the statistical analysis. The dependent variable, *FTAC Support*, is a categorical variable coded “2” if labor groups representing employees in the occupation “supported and endorsed” the FTAC campaign for countervailing duties and Section 301 trade action against Canada; “1” if labor groups in the occupation were neutral on the FTAC campaign or no position could be determined; and “0” if labor groups in the occupation publicly opposed the FTAC campaign.<sup>29</sup> The

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<sup>28</sup> “Report on the June 2005 National Executive Board Meeting,” International Cinematographers Guild (IATSE Local 600), [http://www.cameraguild.com/news/guild/05\\_07\\_20\\_executive\\_board\\_meeting.html](http://www.cameraguild.com/news/guild/05_07_20_executive_board_meeting.html). According to Vaucher (2004, E3), the International Cinematographers Guild is “one of the largest and most influential entertainment industry unions.”

<sup>29</sup> Appendix A reports the sources used to code this variable. In one instance, “Actors” (SOC 27-2011), labor groups representing workers in the occupation adopted opposing positions, and the occupation therefore was coded “1” for neutral or no position. In this case, SAG supported the FTAC petition for countervailing duties while AFTRA opposed it. SAG primarily represents actors in feature films or television programs shot on film, while AFTRA includes actors in television programs shot on videotape

units of analysis are SOC codes.<sup>30</sup>

In evaluating how offshoring affects wage inequality and labor-group preferences, a critical issue is how to define and measure the skill intensity of different occupations. Skill is not easily observed, so it is necessary to devise proxy measures. One approach is to use wages as a proxy for skill on the premise that the two will be correlated. However, it is preferable to have measures of skill that are independent of compensation. Another popular measure is educational attainment, as many studies presume that workers who have received a college degree are more highly skilled than those who have not. The level of training required for a given occupation is a third potential measure of skill.

The analysis that follows employs four different proxy measures of the level of skill in an occupation. The first measure, *Education*, is the percentage of workers aged 25-44 who have completed a college degree. The second measure, *Training*, is a categorical variable that ranges from 1-10, and it is adapted from the BLS *Occupational Outlook Handbook*, which assigns a category “that best describes the education or training needed by most workers to become fully qualified” in an occupation.<sup>31</sup> The third

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(such as situation comedies), along with announcers, news analysts, reporters, and correspondents. About 45,000 actors belong to both the 118,000-member SAG and the 80,000-member AFTRA (Lyman 2003).

<sup>30</sup> Labor groups that expressed a position on countervailing duties or the Section 301 petition were matched to SOC codes using two methods. First, job functions described on a union’s website and in its collective bargaining agreements (if available online) were matched to occupations in the Dictionary of Occupational Titles (DOT), which includes 12,942 detailed occupations. DOT codes were then matched to SOC codes using a DOT-SOC crosswalk file (<ftp://ftp.xwalkcenter.org/download/career.kit/dotsoc00.dbf>). Second, occupational guides for occupations prevalent in motion picture services were consulted for information on union representation in that occupation. These guides are available at “Labor Market Information: California Occupational Guides,” State of California, Employment Development Department, <http://www.calmis.cahwnet.gov/htmlfile/subject/guide.htm>.

<sup>31</sup> The analysis drops one of the eleven categories in the BLS *Occupational Outlook Handbook*, “first professional degree,” because it is not present in the data for motion picture services. The categories and codes are as follows: short-term on-the-job training (1); moderate-term on-the-job training (2); long-term on-the-job training (3); work experience in a related occupation (4); vocational training (5); associate

measure, *Skill*, is the level of “complex problem solving skills” required in an occupation. This variable comes from the U.S. Department of Labor’s Occupational Information Network, which ranks occupations based on the importance and level of knowledge, skills, and abilities required to perform the typical job functions.<sup>32</sup> The fourth measure, *Wage*, is the mean hourly wage for the occupation in 2001.

These four measures each capture important elements of labor skills that are not contained in the others. At the same time, there is substantial overlap among the different measures. Table 5 displays pairwise correlations for *Education*, *Training*, *Skill*, and *Wage*. These correlations vary from 0.672 to 0.828, and all are significant at the  $p < .001$  level. To demonstrate the robustness of the results, the probit analysis estimates separate models for each of the four measures, with no preconceptions about which most closely approximates the unobservable level of skill involved in an occupation.

Table 5. Pairwise Correlations for *Education*, *Training*, *Skill*, and *Wage*

Along with the proxy measures for labor skills, the analysis includes control variables. *Premium* is the mean hourly wage for the occupation in motion picture services divided by the mean hourly wage for the occupation in all industries. *Inequality* is a range ratio of the hourly 75th percentile wage divided by hourly 25th percentile wage for the occupation. *Self-employed* is the percentage of workers in the occupation that

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degree (6); bachelor’s degree (7); bachelor’s or graduate degree, plus work experience (8); master’s degree (9); doctoral degree (10).

<sup>32</sup> These rankings range from 0 (“not important or none required”) to 100 (“very important or high level required”). In this analysis, the descriptor that best corresponds to raw skill without being specific to any particular type of work is “complex problem solving skills,” which the Occupational Information Network describes as “[i]dentifying complex problems and reviewing related information to develop and evaluate options and implement solutions.” “Skills– Complex Problem Solving,” O\*Net Online, <http://online.onetcenter.org/find/descriptor/result/2.B.2.i>.

were self-employed in 2002. *Part-time* is a ranking of the prevalence of part-time employment in the occupation.<sup>33</sup> *Employment* is the natural log of employment (not including self-employed) for the occupation in motion picture services.

Because the dependent variable, *FTAC Support*, is ordered categorically, ordered probit is an appropriate method of analysis. Table 6 displays ordered probit results for *FTAC Support*. The four models are identical except that each employs a different proxy measure for labor skills— *Education*, *Training*, *Skill*, and *Wage*, respectively. All of the measures of skill are negatively signed and statistically significant at the  $p < .001$  level. Because the ordered probit coefficients for the different skill measures are not comparable due to scaling, Table 7 displays marginal effects for these coefficients.

Table 6. Ordered Probit Estimates for *FTAC Support*

The results for the control variables are less consistent. *Premium* performs most effectively, as it is statistically significant at the  $p < .01$  or  $p < .05$  in all of the models except Model 4, where *Wage* is the proxy measure for skill. The negative coefficient for *Premium* suggests that workers in occupations that received higher wages in motion picture services than in other industries tended not to support FTAC. *Employment* is significant at  $p < .05$  in Model 3 and Model 4 and weakly significant ( $p < .10$ ) in Model 1. The positive coefficient for this variable suggests that FTAC support was somewhat higher in occupations with larger numbers of workers. *Part-time* is weakly significant ( $p < .10$ ) in Model 3 and Model 4. Neither *Inequality* nor *Self-employed* is statistically significant in any specification.

Table 7 displays the marginal effects of *Education*, *Training*, *Skill*, and *Wage* on *FTAC Support*. Overall the marginal effects are almost identical for the four variables.

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<sup>33</sup> This index takes on values of 1 (very low), 2 (low), 3 (high), and 4 (very high).

*Skill* and *Wage* have slightly larger marginal effects, as the probability of *FTAC Support* declines by 0.376 as *Skill* changes from low to high and 0.373 as *Wage* changes from low to high. The marginal effects for *Education* and *Training*, both 0.337, also are large.

Table 7. Marginal Effects of *Education*, *Training*, *Skill*, and *Wage* on *FTAC Support*

The probit models strongly support the hypothesis that labor skills are a key determinant of labor-group preferences for policies toward offshoring. In the FTAC campaign for countervailing duties and Section 301 action against Canada, the groups that lobbied to restrain offshoring represented low-skilled occupations. Labor groups in high-skilled occupations generally opposed these measures or took no position.

### **General Implications for Services Offshoring**

Offshoring has affected workers in many services, yet the level of lobbying activity by labor groups in motion pictures remains unusual. While the paper's theoretical argument is not confined to motion picture services, two features of the case suggest that political responses to offshoring could be different in other settings.

First, labor organization may be less cohesive in motion picture services than in manufacturing industries and some other services.<sup>34</sup> Motion picture workers "tend to be relatively fragmented, belonging to literally dozens of professional associations and

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<sup>34</sup> Union density— the percentage of workers with union membership— is higher in motion picture services (15.0 percent) than in manufacturing generally (13.0 percent). Manufacturing unions such as the United Automobile Workers and the United Steelworkers may seem unparalleled in their size and breadth, but as the previous section noted motion picture unions such as IATSE, SAG, and AFTRA are very large. In private sector services as a whole, 7.0 percent of workers belonged to unions in 2005, just half the rate in manufacturing. The services with the highest union density are utilities (27.4 percent), transportation and warehousing (23.4 percent), and telecommunications (21.4 percent). Unionization rates are from "Union Affiliation of Employed Wage and Salary Workers by Occupation and Industry," BLS, <http://www.bls.gov/news.release/union2.t03.htm>.

unions, and lacking a unified identity akin to workers in the steel or auto industry” (U.S. Department of Commerce 2001, 12). As a result, “when production is lost, it neither generates the same tangible, visual image of unemployed workers standing outside the fence of a shuttered physical factory, nor does it elicit a cohesive nationwide industry response” (U.S. Department of Commerce 2001, 13). In the paper’s theoretical approach, distributional effects shape policy preferences, which motivate political responses– but preferences may not be revealed in political behavior if collective action costs are high relative to the expected benefits of policy change. Because labor is less unionized in services generally than in manufacturing, service workers may be disadvantaged in their ability to obtain policy remedies to the offshoring problem.

In the case of motion pictures, geographic concentration counteracts labor union fragmentation. As Busch and Reinhardt (2000) demonstrate, geographic concentration increases political mobilization in trade-exposed industries. The seat of motion picture production, Los Angeles County, accounted for 53 percent of employment and 64 percent of wages paid in 2001.<sup>35</sup> Jensen and Kletzer’s (2006, 84-89) locational Gini places this industry in the top eight most geographically concentrated of 83 private services. Because jobs and production are highly localized, the labor market effects of offshoring are intensely felt in a small geographic area. This spatial agglomeration places workers in close proximity, which facilitates collective action. Geographic concentration therefore makes motion picture services a more likely case for collective action in response to offshoring. In geographically dispersed services with fragmented labor unions, political activity may take longer to mobilize, if it occurs at all.

A second feature of the case that requires attention is the possibility that Canadian subsidies played a role in the movement of U.S. production offshore. In 1998, Canada’s federal government expanded its Production Services Tax Credit, which refunds up to 11

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<sup>35</sup> U.S. Census Bureau, County Business Patterns, <http://censtats.census.gov/cbpnaic/cbpnaic.shtml>.

percent of eligible labor costs for studios filming in Canada (raised to 16 percent in 2003), and this policy decision coincides with increased offshoring in Figure 1. Though the relative contribution of tax credits, the weak Canadian dollar, technological changes such as wider use of the Internet, and the appeal of Canadian venues such as Vancouver and Toronto as stand-ins for U.S. locales is hotly debated, clearly a concerted foreign effort to attract U.S. film production helped to justify the FTAC campaign for trade remedies and rally workers behind it. In other cases where responsibility cannot be so easily pinned on unfair trade practices abroad, support for trade remedies will be more difficult to assemble, and labor groups will be pressed to pursue other policy alternatives in response to offshoring.

The problem for labor groups facing dislocation due to offshoring is that service workers are not eligible for transitional income support under the TAA program. In the Department of Labor's interpretation of the legislation only "workers who produce articles" qualify for benefits, and Congress declined to extend coverage to services in the TAA Reform Act of 2002 (Brainard, Litan, and Warren 2006). For workers in services, unsatisfied demand for TAA is the result of the confluence of increased offshoring and the broadening of benefits for manufacturing industries. As Figure 2 illustrates, TAA petitions in service industries nearly doubled between 1998 and 1999, and then tripled from 2001 to 2003. Yet certification rates continue to range between 10 percent and 20 percent, which means that more than 200 petitions have been denied on an annual basis since 2003. In one case, software engineers who lost their jobs when IBM moved the work overseas filed a class-action suit after the Department of Labor denied their TAA claim. These sorts of examples are likely to multiply as the offshoring trend proceeds.

Figure 2. TAA Petitions and Certification Rates in Service Industries, 1997-2006

Thus, the response of displaced and at-risk workers to offshoring is a critical

policy issue. From a social welfare standpoint, transitional assistance for retraining and job search may be preferable to protectionist limits on offshoring. But the inability of displaced service workers to gain TAA certification encourages organized campaigns for trade remedies to restrain offshoring, as occurred in the case of motion picture services. While political activity against offshoring remains unusual in services to date, workers in motion pictures *did* respond by organizing according to skill level, just as one might expect of labor in manufactures such as steel or autos.

At the same time, lobbying campaigns to limit offshoring face obstacles. One significant barrier is the statutory requirement that a majority of the workers in an industry support a trade remedy petition. As the paper illustrates, offshoring primarily injures low-skilled workers in the segment of production that is being moved abroad. Meanwhile, capital and high-skilled labor in the industry benefit from offshoring, and low-skilled workers in activities that remain onshore may not experience any short-run loss. Because the harm is concentrated on workers in narrow occupational categories, broad political mobilization to protect jobs is challenging in service industries fragmented by differences of skill and occupation. As offshoring decimates the ranks of low-skilled workers, anti-trade lobbies are likely to further diminish in size and strength. The FTAC campaign, which has sought but thus far failed to gain trade measures against offshoring, bears out these inferences.

## **Conclusion**

The political economy of offshoring remains understudied, despite the attention the issue has received from politicians and the media. Theoretically-inspired empirical analysis is needed to determine how much production is moving offshore, the effects on employment and wages for different types of work, and the likely political responses of labor groups.

This study of motion picture services provides a foundation for analyzing the

political economy of offshoring in other services. The empirical analysis demonstrates, first, that offshoring in motion pictures increased considerably in the past decade. Second, wage inequality grew in the period when offshoring was accelerating, suggesting that offshoring is skill biased in shifting relatively low-skilled work offshore. Third, low-skilled labor in motion pictures has been politically active in seeking trade measures to curb offshoring, consistent with hypotheses derived from standard trade theory.

Understanding how offshoring affects labor markets and when workers will passively accept their fate through “exit” or seek transitional support, trade restraints, and other policy remedies by “voice” requires systematic study of several industries to determine if findings for one case hold generally. Future research should address two sets of questions. First, it is important to know whether offshoring in other services is also skill biased, and whether services with cohesive labor organizations and geographically concentrated employment are more politically active. Second, there is the broader political dimension: if offshoring impacts specific constituencies, then certain types of elected representatives will feel more pressure to promote legislation to keep service jobs onshore. Appeals from organized labor struggling to protect manufacturing jobs largely have affected Democrats, contributing to greater partisanship on trade issues in the last thirty years. White-collar service workers are not so tightly mobilized within one political party, so the continued expansion of offshoring may begin to wear down this recent partisan cohesiveness in trade.

Further research also is necessary to inform policy debates about how to respond to offshoring. Proposals advanced in recent years include extending TAA to cover services, changing the tax code to end tax deferrals on income earned abroad, creating tax incentives to keep jobs onshore, and using trade protection to discourage offshoring. But the costs, benefits, and scope of the various alternatives will remain uncertain until more is known about the offshoring phenomenon and its effects on different types of workers.

## **Appendix A. Sources of Study Variables**

### *Dependent Variable*

*FTAC Support.* The analysis uses three sources to code support for the FTAC campaign for countervailing duties and Section 301 trade action against Canada.

- 1). The petitioners for countervailing duties are listed in Joseph (2001).
- 2). A list of groups endorsing the Section 301 complaint appears at “The Facts about FTAC’s Section 301(a) Filing,” FTAC, <http://www.ftac.net/html/301a-2.html>.
- 3). The International Cinematographers Guild, Local 600 IATSE, is coded as an FTAC supporter because of its letter to the International Trade Administration of 28 June 2004, “Comments on Unfair Trade Practices Task Force, 69 Fed. Reg. 30,285 (2004),” U.S. Department of Commerce, <http://ia.ita.doc.gov/download/utptf/comments/icg-utp-cmt.pdf>.

### *Independent Variables*

*Education; Training.* “Occupational Projections and Training Data, 2004-05 Edition” (Table I-1: Educational attainment cluster, most significant source of postsecondary education or training, and educational attainment distribution, by occupation), BLS, [http://www.bls.gov/emp/optd/optdtabi\\_1.zip](http://www.bls.gov/emp/optd/optdtabi_1.zip).

*Skill.* “Skills– Complex Problem Solving,” O\*Net Online, <http://online.onetcenter.org/find/descriptor/result/2.B.2.i>.

*Wage; Inequality; Employment.* “2001 Occupational Employment and Wage Estimates, 2001 National 3-Digit SIC Industry-Specific Estimates,” BLS,

<ftp://ftp.bls.gov/pub/special.requests/oes/oes01in3.zip>.

*Premium.* The mean hourly wage for all industries appears in “2001 Occupational Employment and Wage Estimates, 2001 National Cross-Industry Estimates,” BLS, <ftp://ftp.bls.gov/pub/special.requests/oes/oes01nat.zip>.

*Self-employed; Part-time.* “Occupational Projections and Training Data, 2004-05 Edition” (Table III–1: Occupational employment and job openings data, 2002–12, and worker characteristics, 2002), BLS, [http://www.bls.gov/emp/optd/optdtabiii\\_1.zip](http://www.bls.gov/emp/optd/optdtabiii_1.zip).

## Appendix B. Descriptive Statistics

<i>Variable</i>	<i>N=</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Minimum</i>	<i>Maximum</i>
<i>FTAC Support</i>	144	1.18	0.44	0.00	2.00
<i>Education</i>	144	35.27	26.94	0.90	97.80
<i>Training</i>	144	4.10	2.80	1.00	10.00
<i>Skill</i>	139	44.40	17.01	15.00	85.00
<i>Wage</i>	134	21.39	10.03	6.90	49.11
<i>Premium</i>	130	1.08	0.21	0.70	2.19
<i>Inequality</i>	130	1.75	0.37	1.12	3.66
<i>Self-employed</i>	144	9.30	14.13	0.00	67.90
<i>Part-time</i>	144	2.19	1.03	1.00	4.00
<i>Employment (log)</i>	130	2.58	0.70	1.48	4.81

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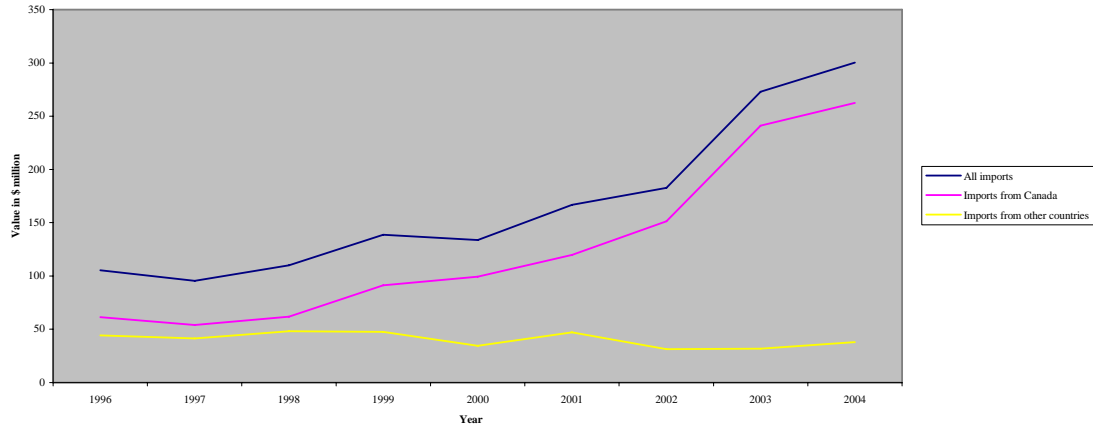
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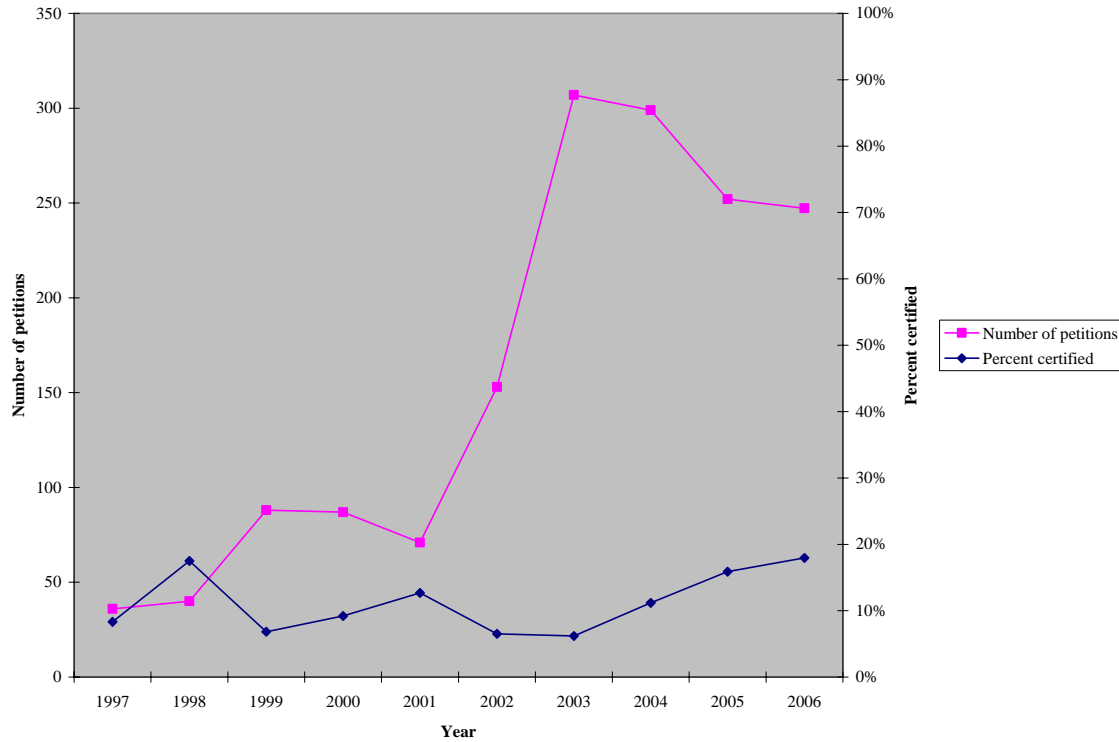
**Figure 1.** U.S. Imports of Motion Picture Goods (million U.S. dollars), 1996-2004



Note: Data are for Harmonized Tariff System (HTS) 3706, “Motion-picture film, exposed and developed.”

Source: Interactive Tariff and Trade DataWeb, U.S. International Trade Commission, <http://dataweb.usitc.gov>.

**Figure 2.** TAA Petitions and Certification Rates in Service Industries, 1997-2006



Note: Data are from TAA and NAFTA-TAA programs for service industries in Standard Industry Codes 7011-8999.

Source: Searchable databases at U.S. Department of Labor, Employment and Training Administration, [http://www.doleta.gov/tradeact/taa/taa\\_search\\_form.cfm](http://www.doleta.gov/tradeact/taa/taa_search_form.cfm) and [http://www.doleta.gov/tradeact/taa/nafta\\_search\\_form.cfm](http://www.doleta.gov/tradeact/taa/nafta_search_form.cfm).

**Table 1.** U.S. Imports of Motion Picture Services (million U.S. dollars), 1996-2001

<i>Payments to unaffiliated foreigners to finance production costs for:</i>	<i>1996</i>	<i>1999</i>	<i>CAGR, 1996-1999</i>	<i>2001</i>	<i>CAGR, 1999-2001</i>
Motion pictures	207	355	19.7%	481	16.3%
Broadcast program material	67	278	60.7%	301	4.0%
All filmed entertainment	274	633	32.2%	782	11.1%

Source: U.S. Bureau of Economic Analysis (2003, 76; 2004, 45); U.S. Department of Commerce (2001, 19).

**Table 2.** U.S. Imports of Motion Picture Goods and Services as a Share of Revenues  
(million U.S. dollars), 1996-2001

<i>Type of import:</i>	<i>1996</i>	<i>1999</i>	<i>2001</i>
Motion picture goods	106	139	167
Motion picture services (Payments to unaffiliated foreigners)	274	633	782
Motion picture services (Estimated payments to affiliated foreigners)	69	158	195
<b>Total imports</b>	<b>448</b>	<b>930</b>	<b>1,143</b>
Revenues for production and distribution	37,188	42,306	45,566
Imports as a share of revenues	1.2%	2.2%	2.5%

Source: Imports are from the sources for Figure 1 and Table 1; revenues are from U.S. Bureau of the Census (2005, 20).

**Table 3.** Theil Indices of Inequality in Wages for Motion Picture Services

<i>Year</i>	<i>Theil index</i>	<i>Standard error of Theil index</i>	<i>Lower bound</i>	<i>Upper bound</i>
2001	0.104	0.009	0.084	0.129
2000	0.105	0.013	0.083	0.134
1999	0.089	0.013	0.067	0.121
1998	0.077	0.009	0.063	0.096
1997	0.085	0.011	0.064	0.106

Note: Theil indices and bootstrap estimates of standard errors were generated with 1,000 bootstrap replications. “Lower bound” and “Upper bound” represent bias-corrected 95 percent confidence intervals. Bias-corrected confidence intervals are reported for added precision; however, they are nearly identical to the normal and percentile estimates.

**Table 4.** Bootstrap Test of Equality of Theil Indices

<i>Year</i>	<i>T<sub>2</sub></i>	<i>2001</i>	<i>2000</i>	<i>1999</i>	<i>1998</i>
<i>T<sub>1</sub></i>					
<i>2000</i>		0.021			
<i>1999</i>		0.317**	0.296**		
<i>1998</i>		n.a.	n.a.	n.a.	
<i>1997</i>		n.a.	n.a.	n.a.	0.017

Note: Bootstrap estimates were generated with 1,000 replications.

\*\*\*  $p < .001$     \*\*  $p < .01$     \*  $p < .05$     †  $p < .10$

**Table 5.** Pairwise Correlations for *Education*, *Training*, *Skill*, and *Wage*

<i>Variable</i>	<i>Education</i>	<i>Training</i>	<i>Skill</i>	<i>Wage</i>
<i>Education</i>	1.000			
<i>Training</i>	0.828 <sup>***</sup> N=144	1.000		
<i>Skill</i>	0.672 <sup>***</sup> N=139	0.772 <sup>***</sup> N=139	1.000	
<i>Wage</i>	0.754 <sup>***</sup> N=134	0.828 <sup>***</sup> N=134	0.722 <sup>***</sup> N=129	1.000

Note: Cell entries are pairwise correlations and significance levels, with the number of observations beneath the estimate.

\*\*\* p < .001    \*\* p < .01    \* p < .05    †p < .10

**Table 6.** Ordered Probit Estimates for *FTAC Support*

<i>Variable</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
<i>Education</i>	-0.029*** (0.008)			
<i>Training</i>		-0.280*** (0.081)		
<i>Skill</i>			-0.050*** (0.013)	
<i>Wage</i>				-0.089*** (0.026)
<i>Premium</i>	-2.068** (0.797)	-1.680* (0.768)	-1.702* (0.778)	-0.585 (0.812)
<i>Inequality</i>	0.122 (0.468)	-0.036 (0.434)	-0.408 (0.410)	-1.287 (0.431)
<i>Self-employed</i>	0.020 (0.013)	0.016 (0.012)	0.017 (0.012)	0.017 (0.012)
<i>Part-time</i>	-0.014 (0.154)	-0.206 (0.174)	-0.350† (0.193)	-0.315† (0.196)
<i>Employment</i>	0.366† (0.205)	0.294 (0.205)	0.461* (0.208)	0.428* (0.202)
Threshold 1	-4.881 (1.278)	-5.380 (1.315)	-7.012 (1.474)	-4.916 (1.309)
Threshold 2	-0.840 (1.110)	-1.455 (1.124)	-3.102 (1.271)	-1.036 (1.111)
Log likelihood	-52.84	-53.63	-51.50	-54.60
Model $\chi^2$	31.53***	29.95***	33.76***	28.03***
Pseudo r-squared	0.230	0.218	0.247	0.204
Number of cases	121	121	120	121

Note: Cell entries are maximum likelihood estimates and asymptotic standard errors (in parentheses).

\*\*\* p < .001    \*\* p < .01    \* p < .05    †p < .10

**Table 7.** Marginal Effects of *Education, Training, Skill, and Wage* on *FTAC Support*

<i>Variable</i>	<i>1 S.D. below mean value</i>	<i>Mean value</i>	<i>1 S.D. above mean value</i>	<i>Change from low to high</i>
<i>Education</i>	0.366	0.123	0.028	-0.337
<i>Training</i>	0.365	0.128	0.028	-0.337
<i>Skill</i>	0.401	0.126	0.025	-0.376
<i>Wage</i>	0.393	0.132	0.020	-0.373

Note: Cell entries are predicted probabilities from the models in Table 6, minus and plus one standard deviation of the reported variable, holding all other variables constant at their mean values.