Distortions in the International Migrant Labor Market: Evidence from Filipino Migration and Wage Responses to Destination Country Economic Shocks[†]

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We use an original panel dataset of migrant departures from the Philippines to identify the responsiveness of migrant numbers and wages to GDP shocks in destination countries. We find a large, significant response of migrant numbers to GDP shocks at destination, but no significant wage response. This is consistent with binding minimum wages for migrant labor. This result implies that labor market imperfections that make international migration attractive also make migrant flows more sensitive to global business cycles. Difference-in-differences analysis of a minimum wage change for maids confirms that minimum wages bind and demand is price sensitive without these distortions. (JEL F22, J31, J38, J61, O15)

The global market for labor has some of the largest distortions of any factor market (Clemens 2011). The same worker can earn very different wages depending on in which country they work (Clemens, Montenegro, and Pritchett 2008; McKenzie, Stillman, and Gibson 2010). As a result, moving from a poor country to a rich country to work is perhaps the single act most likely to succeed in dramatically increasing an individual's income, as well as that of remaining family members (e.g., Cox-Edwards and Ureta 2003; Yang 2008; Gibson, McKenzie, and Stillman 2013). In recognition of this fact, a number of developing countries have put in place policy measures to help their citizens work abroad. The government of the Philippines has been on the forefront of promoting overseas temporary contract

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work and making emigration part of its national development strategy, and many other developing countries are now seeking to emulate the Philippines in this regard.

However, the recent global financial crisis has highlighted the potential vulnerability of migrant jobs to economic conditions in destination countries. Emigration to Ireland from the new European Union states fell 60 percent from 2008 to 2009, while overall European Union flows to Spain fell by two-thirds. Inflows to the United States fell in almost all legal temporary work categories, including a 50 percent decline in visas issued to low-skilled seasonal workers (Papademetriou, Sumption, Terrazas 2010). Net migrant outflow from Mexico to the United States was only 0.09 percent of the Mexican population in 2010–2011, compared to 0.53 percent in 2006–2007 (Rodriguez 2011). Moreover, despite these responses at the extensive margin (the number of migrants), immigrant employment rates among those who do migrate or remain abroad are more sensitive to the business cycle than the employment rates of natives (Orrenius and Zavodny 2009).

A key contribution of this paper is to show that the high vulnerability of migrant jobs to economic shocks is intimately tied to the large gains in wages that migration offers. The extent to which migration flows respond to shocks at destination depends on the output elasticity of demand for migrant labor and on the extent to which wage adjustment can occur through movements along the migrant labor supply curve. However, estimating this responsiveness in the context of bilateral migration flows is complicated by concerns that economic shocks also affect the migrant origin country, thereby also shifting the labor supply curve and preventing identification of the labor demand impact. In addition, reliable microeconomic data on migrant flows and the wages these migrants earn are extremely rare. We overcome both issues by using a unique database that has information on all new work contracts issued to Filipino workers over the 1992 to 2009 period, including information on the destination country and contracted wage.

The Philippines provides an excellent setting to examine how migration responds to shocks at destination. It was the first country to implement temporary overseas contract work on a wide scale, and Filipinos now migrate in large numbers to a very diverse set of countries, which have experienced substantial heterogeneity in macroeconomic conditions over the period of our data. In 2007, 1.7 million Filipinos were working outside of the Philippines in 181 countries, with overseas contract work the primary channel of emigration.

Using these data, we estimate how the number of contract workers and the wages they are paid respond to economic shocks in destination countries. We find a strong and significant positive relationship between migrant numbers and GDP fluctuations at destination, with the point estimate suggesting migrant quantities respond more than one-for-one to proportional GDP changes. In contrast, we find that the wages migrants are paid have no large or statistically significant relationship with GDP changes at destination. This pattern is consistent with the existence of binding minimum wages that lead to migrant labor supply exceeding labor demand at the contracted wages. This occurs for both low- and high-skilled workers, suggesting the distortion comes not just from national minimum wages in destination countries, but also from restrictions on the wages that migrants of higher skill levels can be paid. For example, the United States' H1-B program that many IT professionals

and foreign professors use to work in the United States requires that employers pay the "prevailing wage" obtained from a salary survey, as do a number of other immigration categories in the United States; Australia requires employers to pay their overseas workers the market salary rate and on top of this, specifies a threshold (currently A\$49,330) that skilled migrants must make; and the Philippines' bilateral labor contracts require workers to be paid the prevailing wage for their positions in the destination countries. As a result, the same market imperfection, which is one reason that workers can so dramatically increase their incomes by working abroad, shifts all the burden of adjustment to demand shocks onto quantities rather than wages.

As supporting evidence that minimum wages bind and to help rule out alternative explanations, we also consider the impact of a 2006 law change that raised the mandated minimum wage for overseas Filipinos working as domestic helpers (maids). We use difference-in-differences analysis to show that this change led to a decline in the number of Filipinos going as domestic helpers to low wage destinations, relative to those going as domestic helpers in higher wage countries and to those going to low wage destinations in other worker categories. In addition, we show that this increase in the minimum wage for domestic helpers led to increases in contracted wages for such workers. This evidence from the single largest occupational category supports the claim that minimum wages bind, and helps rule out concerns that workers and employers might be able to circumvent any regulations by writing a contract for one wage and in practice working for a different wage. The result of such a minimum wage increase is to increase even further the gap between supply and demand for migrant labor, thereby ensuring migrant numbers will remain vulnerable to economic shocks at destination.

The remainder of the paper is structured as follows: Section I describes the institutional setting and labor market for Filipino overseas workers, and its implications for modeling labor adjustment to GDP shocks at destination. Section II describes our new database. Section III provides the main results, highlighting the response of migrant numbers and wages to GDP shocks, and examining heterogeneity in these responses. Section IV carries out difference-in-differences analysis of a change in the minimum wage for domestic helpers to bolster our case for a binding minimum wage, by showing that quantities fall and wages rise when this minimum wage is increased. Section V concludes and discusses implications for migration as a development strategy.

I. Institutional Setting and Labor Market for Filipino Overseas Foreign Workers

A. Institutional Setting

As the first country to implement temporary overseas contract work on a wide scale, the Philippines provides a particularly relevant setting for testing the sensitivity of migration to global economic shocks. In 1974, the Philippine government began the Overseas Employment Program to aid Filipinos in finding work overseas

¹ See http://www.immi.gov.au/skilled/temporary-skilled-migration-threshold.htm (accessed October 18, 2011).

due to poor economic conditions in the Philippines. Since the program's inception, Filipino migration has increased dramatically, and Filipinos now migrate in large numbers to an extraordinarily diverse range of destination countries. The top ten destinations account for approximately 86 percent of all new overseas Filipino worker (OFW) hires (see Table 1). Countries such as Saudi Arabia, the U.A.E., and Kuwait in the Middle East, and Japan, Hong Kong, Taiwan, and Singapore in East Asia are the most common destinations, but Italy, the United Kingdom, Canada, and the United States are also among the top fifteen destinations. By comparison, 98 percent of Mexican migrants are in the United States (World Bank 2011). Migration from the Philippines is largely temporary and legal, and occurs through licensed private recruitment agencies. Overseas temporary contract work is the primary channel through which Filipinos migrate, and in order to be cleared to leave the Philippines, an OFW must have a job contract in hand. Between 1992 and 2000, 83 percent of Filipinos abroad were engaged in contract work,² with most of the rest being nontemporary workers migrating through family reunification policies or other permanent migration channels. This form of legal temporary work is likely to become more common in future years as countries like Bangladesh, Indonesia, Nepal, Sri Lanka, and India seek to follow the Philippine model, and destination countries consider how to balance demands for labor with public concerns about migrant settlement.

B. Large Potential Supply

Data from the 2010 Gallup World Poll suggest that there are many individuals in the Philippines who would like to work abroad but who are not currently doing so. This poll asked a representative sample of 1,000 adults in the Philippines the question "Ideally, if you had the opportunity, would you like to go to another country for temporary work, or not?" Overall, 51.1 percent of adults aged 15 and over said they would like to work abroad in temporary work (and 18.6 percent said they would like to migrate permanently abroad). Desire to migrate temporarily abroad is highest for individuals in the 15–34 age range, for individuals in urban areas, and for more educated individuals. The voting age population (18+) in the Philippines is approximately 52 million, so taking 51 percent of this gives approximately 26 million people who say they would like to migrate temporarily. This is ten times the magnitude of the 2.0 million who actually did work abroad as overseas foreign workers in 2010.³ Even allowing for the likelihood that many more people express an interest in migrating abroad than would actually migrate if given the opportunity, these numbers still suggest large interest in migration.

Our qualitative interviews with employment agencies in the Philippines also support the notion of excess supply; it is common to hear reports that the market for overseas contract labor "is a buyer's market." In particular, they note that the

² Authors' calculation from the Survey of Overseas Filipinos (SOF), an offshoot of the Labor Force Survey in the Philippines.

³http://www.census.gov.ph/data/pressrelease/2011/of10tx.html (accessed July 19, 2011).

emergence of Bangladesh, India, Indonesia, Sri Lanka, and Pakistan as competing labor-sending countries has made it more difficult for them to find jobs for Filipinos.

C. Wage Setting and Minimum Wages

The Philippine Overseas Employment Administration (POEA) regulates the recruitment and employment of Filipinos for work abroad. Their rules and regulations dictate that there be "guaranteed wages for regular work hours and overtime pay, which shall not be lower than the prescribed minimum wage in the host country or not lower than the appropriate minimum wage standards set forth in a bilateral agreement or international convention, if applicable, or not lower than the minimum wage in the country [the Philippines], whichever is highest." This rule effectively sets a minimum wage for legal overseas work, since the Philippine government will not process work contracts that have wages set at a level below that set out in this law. Such minimum wage setting for overseas migration is a direct result of the 1974 Philippine Labor Code and was instated for the primary purpose of ensuring that overseas workers are not exploited or discriminated against (Philippine Labor Code 1974).

In practice only some of the host countries for Filipino workers have their own minimum wages that apply to foreign labor. Thus, for example, Filipino workers in the United States, Canada, and Korea are covered by minimum wage laws in those countries, whereas other destinations like Saudi Arabia, the United Arab Emirates, Qatar, Bahrain, Oman, and Malaysia do not have minimum wage laws. Yet, as will be discussed below, although they do not have minimum wage laws, the immigration laws of most of these countries require migrants to be paid wages no less than those offered to nationals, effectively imposing a minimum wage for migrants. Furthermore, for a number of destination countries, the Philippine government negotiates bilateral agreements, which in some cases set additional minimum wage requirements.

As stipulated in POEA's Rules and Regulations, prior to deployment of an OFW, work contracts must be verified by the Philippine Overseas Labor Offices (POLOs) to ensure that the contract conforms both with the minimum standards set forth by POEA and the labor laws and legislation of the host country. For each occupation, POLOs determine the prevailing market wages in the host country and will not approve contracts that set wages below these levels. Thus, even more skilled occupations, whose incomes are above the Philippine minimum wage and above the overseas minimum wage for low-skilled occupations, still have limits on how low their contracted wages can be. In addition to these steps, in 2006 the Philippine government enacted the Household Service Workers Reform, which set a universal

⁴http://www.poea.gov.ph/rules/POEA%20Rules.pdf (accessed July 19, 2011).

⁵OFWs are often quite vulnerable. For instance, in 2011, welfare assistance, such as psychological counseling, legal assistance, and conciliation, was provided to 268,026 overseas workers (OWWA Annual Report 2011).

⁶To determine prevailing market rates, POLO officers use available information from both the government and private sector in the host country as a reference. They also refer to rates previously approved by POEA for the destination country and occupation (POEA Deputy Administrator Liberty Casco, personal correspondence, 2013).

minimum of US\$400 for overseas work in the domestic service sector. We examine the impact of this reform in Section IV.

A natural question is then whether these minimum wages set by the Philippines are enforced. It appears that for the most part they are. Since the establishment of the POEA in 1982, there has been some system for employees to file complaints if contracted wages are not received. This system of complaints was formally written into law with the passage of the Migrant Workers Act of 1995 (RA 8042) by the Congress of the Philippines. It was amended in 2010 (RA 10022) and maintains regulations for enforcement of wages.

In the event that an OFW does not receive his or her contracted wages, he or she can file a complaint against the employer and the recruiting agency. The POLO initially tries to settle the dispute directly between the employer and worker. If this is unsuccessful, there is a dispute settlement in the labor courts of the host country. Should this procedure fail, POEA tries to resolve the dispute with the recruiting agency through internal conciliation services. As a last resort, the worker can file a claim against the recruiting agency in the Philippine labor courts. In addition to monetary punishment including the payment of contracted wages as well as fines, recruitment agencies with labor contracts found to be in violation may face other sanctions such as having their operating licenses suspended or cancelled.

OFWs are widely aware of the procedures surrounding contract disputes. As part of their mandatory Pre-Departure Orientation Seminar (PDOS), OFWs receive information about their rights and responsibilities within their employment contract and what to do in the case of contract violations. In addition to a large legal assistance fund for migrant workers, the president of the Philippines appoints a legal assistant for migrant workers to assist with these contract violations. Additionally, Philippine embassies and POLOs in common destination countries have 24-hour resource centers providing legal services.

D. Quotas, Wages, and Migration Policies around the World

Although there is no global database of migration policies that details which countries impose migration quotas or minimum wage restrictions on migrants, there have been a couple of attempts by international organizations to examine these issues. A review by the Organisation for Economic Co-operation and Development (2006), henceforth OECD, found that "migration quotas per se tend to be the exception in OECD countries" (OECD 2006, 113) but that in contrast "in many OECD countries, work permits for potential cross-border recruits are subject to an employment test" (OECD 2006, 114). For example, Japan, Canada, Australia, Greece, Belgium, Finland, and France were some of the OECD countries with no quotas during the period of our study, relying on labor market tests and/or points systems. These employment tests typically require employers to show that there is no qualified candidate available to fill the job, and can require advertising the job first to natives at the prevailing wage.

A more systematic and comprehensive effort occurred via an International Labor Office (ILO 2004) survey that surveyed migration policies at that time, getting replies from 93 member states. While one-third of countries replied that they had

specific quotas for migrant workers admitted for certain reasons, these were almost always partial in nature, applying only to certain sectors or types of firms, such as quotas for seasonal workers or, in some countries, restrictions at an enterprise level on a maximum ratio of foreign to local workers. The only country in our sample that had a national level quota is Switzerland, which has quotas on the number of non-EU nationals entering. Moreover, quotas were not always binding. For example, the United States has no quotas, only a labor market test, for seasonal agricultural workers coming under the H2-A policy; has a quota of 66,000 seasonal nonagricultural workers coming in under the H2-B policy, which has not been met in many years; and a quota for high-skilled temporary workers coming under the H1-B policy, which was not filled between its establishment in 1990 and 1997, or between 1999 and 2002, but has been filled since then (OECD 1998; National Foundation for American Policy (NFAP) 2010).

In contrast, the vast majority of countries use a labor market test requiring employers to show that there is a lack of qualified applicants and/or requiring that migrant workers be offered a wage no less than the prevailing wage offered to nationals in that occupation. In the ILO survey, 84 percent of countries reported such a requirement, and the only countries in our study's sample that didn't report having that requirement were Saudi Arabia and Singapore. However, Singapore does charge employers of low- and medium-skilled workers a monthly levy for each foreign worker employed, with this levy ranging from US\$123 to US\$362 per month (Yeoh and Lin 2012), which acts to increase the effective wage paid by employers of foreign workers. These labor market tests and requirements that migrant workers be offered a wage no less than that of nationals often occur alongside any partial quotas countries may have, and can be a reason quotas do not bind.

As a result of these policies, there is effectively a minimum wage that needs to be paid to be able to bring a migrant worker into most countries, with the labor market test requirement meaning this minimum wage varies with occupation and skill level. Thus, when we refer to minimum wages, we are referring to a more general phenomenon than is typically considered in the labor literature, which focuses on a single minimum wage that is the least every worker must be paid. In the Philippines migration context, minimum wages can vary by destination country, skill level, and occupation.

E. Model of the Labor Market and Response to GDP Shocks Abroad

Clemens, Montenegro, and Pritchett (2008) estimate that a low-skilled Filipino worker would earn 3.5 to 3.8 times as much working in the United States as they do in the Philippines, even after accounting for differences in costs of living. However, the wages Filipino workers are paid for the same occupation differ a great deal across destination countries. For example, in 2005, domestic helpers earned a median monthly wage of US\$1,527 in Australia versus US\$200 in Malaysia. Similarly, production workers in the United Kingdom in 2005 earned US\$1,742 per month, whereas in the United Arab Emirates, the corresponding figure was only US\$275.

A model of the migrant labor market should explain why (i) there is variation across destinations in the wages migrants earn; and (ii) more people don't migrate

despite the much higher wages to be earned abroad. We consider three potential models of the labor market that might explain these facts, and consider the implications of each for the response to a GDP shock in the destination country.

Market Clearing Model.—The most basic model is one in which the labor market clears in each destination country, and the higher wages earned abroad are just enough to offset workers' disutility of leaving their home country and spending time away from family, with this disutility varying across destination countries. In such a model, a positive output shock in the destination country will shift out the labor demand curve, leading to an increase in wages and an increase in the quantity of migrants. However, this model is not realistic for several reasons. First, it does not accord with the evidence for excess supply of migrants and institutional rules on wages detailed above. Second, it would require that migrants experience much less disutility going to Saudi Arabia (which has relatively low wages) than Canada (which has relatively high wages), which does not accord with the preferences migrants give when asked about destinations. This is particularly the case for destinations in the Middle East, in which mostly Christian Filipino workers often experience difficulties in practicing their religion. The same critique would apply for explanations based on a flat (perfectly elastic) labor supply curve: it would require migrants to prefer low-wage destinations in the Middle East to Canada, Europe, and the United States, requiring an offsetting higher wage premium to overcome the disutility of going to these locations.

A more likely model therefore includes distortions that prevent the migrant labor market from clearing, and that lead to wages above the level that would equate supply and demand for migrant labor. The two most probable sources of distortions are minimum wage requirements and quotas. We discuss each in turn.

Binding Minimum Wages.—The discussion above of how wages are set through bilateral agreements and destination country laws suggests that an appropriate model of international migration, for a particular overseas labor market, could be that set out in Figure 1. There is a binding minimum wage, W_m , and the willing supply of Filipino workers at this wage greatly exceeds market demand. Market demand is given by the market demand curve, LD(GDP1, X), where demand depends on the level of GDP in the destination country economy, and on characteristics, X, of the occupation and destination country. The result then is that the number of individuals who get to migrate, M1, is purely determined by labor demand. Variation in wages across destinations then arises from variation in these minimum wages.

Consider then the impact of a positive shock to GDP in the destination country, which increases GDP from GDP1 to GDP2. If the minimum wage still continues to bind, all adjustment will be through migration quantities—the number of migrants will increase to M2, while wages will remain at the minimum wage, W_m . This leads to the following hypothesis:

Hypothesis 1: If binding minimum wages are the main distortion, international migration flows will be positively correlated with changes in GDP in destination countries, while wages will not be.

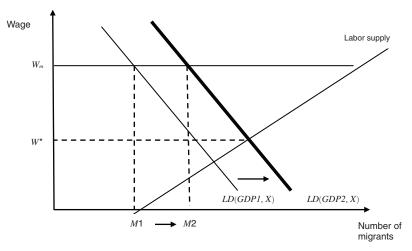


FIGURE 1. RESPONSE OF DEMAND FOR FILIPINO WORKERS TO GDP SHOCK WITH BINDING MINIMUM WAGES

This analysis assumes that the minimum wage itself does not change with the business cycle. This seems a plausible assumption in the case where wage contracts are negotiated for several years or where the Philippines itself has set the minimum wage. However, if minimum wages (or the minimum allowed in work contracts) are determined with reference to prevailing market wages, the minimum wage may increase at the same time as labor demand, thereby increasing wages and reducing the extent to which the increase in labor demand increases employment. This seems more likely in skilled occupations, suggesting we may see heterogeneity in the response to GDP shocks by skill.

Dube, Naidu, and Reich (2007) note that this prediction that a rise in minimum wages will reduce employment need not hold in the standard competitive labor model if product demand is not price elastic and input substitution possibilities are not present. Adjustment then occurs through goods prices. In our setting it seems likely that on average products being produced by migrants have some price elasticity, and, furthermore, that employers have some scope for substituting Filipino workers for other inputs (including workers from other migrant nations, a topic we return to in Section IV), so that higher minimum wages would lower migrant employment.

However, a rise in minimum wages need not reduce employment under some noncompetitive labor market models. For example, under dynamic monopsony models, labor market frictions from matching and hiring workers result in an equilibrium with positive unemployment and positive quit rates (Manning 2004). A rise in the minimum wage can then result in reductions in quitting and/or vacancy rates, which can potentially increase net employment while reducing the flow into and out of employment. The standard contract length terms of Filipino workers may make this model less relevant in our setting, but to check this we will examine how contract duration and rehires of migrants change.

Binding Migration Quotas.—An alternative form of distortions could arise from binding migration quotas. A binding quota restricts labor demand to a maximum

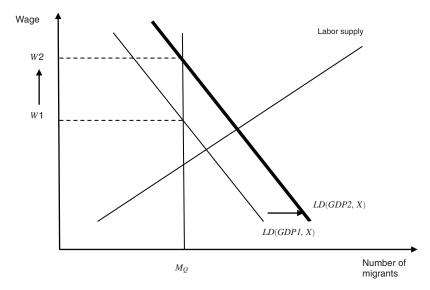


FIGURE 2. RESPONSE OF DEMAND FOR FILIPINO WORKERS TO GDP SHOCK WITH BINDING QUOTAS

of the quota amount M_Q , leading to a wage W1 above the market clearing level (Figure 2). Countries with more binding quotas will then pay higher wages. In such a model, the prediction is an increase in output in the destination country will cause firms to compete harder for the same number of quota spaces, leading to an increase in wages, and no adjustment in the quantity of migrants.

Of course the quota itself might be endogenous to economic conditions at destination, with quotas increasing during economic expansions and being reduced in recessions. This would lead to some procyclicality in both quantities and wages, since it seems unlikely that quotas would be adjusted frequently and finely enough to keep wages fixed.

Whilst plausible in some contexts, we believe it unlikely that binding quotas is the main distortion in the global market for Filipino migrant labor given the evidence discussed above, which shows that the majority of countries do not have quotas, and those that do typically only have them for some categories of migrants. Nevertheless, it remains an empirical question as to whether wages or quantities see the majority of the adjustment to GDP shocks, shedding light on which distortion is more likely to be underlying the high wage gains to be had through migration. Since the above theory suggests responses are likely to vary with migration policy, we will also examine heterogeneity in responses to whether or not destination countries use some form of a migration quota.

Matching Models.—In matching models of the labor market (e.g., the canonical Mortensen and Pissarides 1994 model), equilibrium unemployment can occur without minimum wage laws or quotas. It is common for theoretical macroeconomic models to assume some form of wage rigidity (e.g., Hall 2005; Shimer 2005), so as to replicate the empirical variability in unemployment. But the empirical evidence (in particular Solon, Barsky, and Parker 1994 and Martins, Solon, and Thomas

2012) actually reveals substantial wage responses to macro fluctuations,⁷ and in particular this is true for hiring (starting) wages. Taking the observed business-cycle procyclicality of hiring wages as a departure point, the model of Pissarides (2009) matches the empirical variability in unemployment by modifying the specification of matching costs, while allowing flexibility in hiring wages. Such a model predicts, in accord with the empirical facts, procyclicality in both new hires and hiring wages. This prediction will be directly tested in our empirical analysis, which will examine new hires and hiring wages in the international migrant labor market.

II. Data

A. POEA Microdata

The data are from the Philippine Overseas Employment Administration's (POEA) database of departing OFWs. Created in 1982, POEA is a Philippine government agency within the Department of Labor and Employment. POEA has a multifaceted agenda: it monitors recruitment agencies, monitors worker protection, and conducts a variety of other tasks relating to the oversight of the overseas worker program. Further, as a final step prior to departure, all OFWs are required to receive POEA clearance. Since all OFWs are required to pass through POEA, the agency has a rich dataset composed of all migrant departures from the Philippines. This is the first paper to utilize this rich data resource.

Since all OFWs must pass through POEA, the dataset contains data on departures for all land-based new hires leaving the Philippines between 1992 and 2009 for temporary contract work. New hires are defined as OFWs who are starting a contract with a new employer. These migrants may have previously worked overseas, but the contract that they are presently departing on is new, rather than renewed. For each OFW departure from the Philippines, the database includes name, birthdate, gender, civil status, destination, employer, recruitment agency, contract duration, occupation, date deployed, and salary. Typical contracts are of one or two year durations, with an average duration of 17.7 months over our sample period. Female workers account for 60.6 percent of new hires during this period. The most common occupations are in production (e.g., laborers, plumbers), services (domestic helpers, cooks) and professional occupations (nurses, engineers, entertainers).

To study the flows of migrants in response to fluctuations in GDP, individual migration records are grouped by year and destination country and combined to create a count of the number of migrants to each destination country annually between 1992 and 2009. Table 1 displays the top twenty OFW destinations averaged over the sample period, along with their average annual flow. Saudi Arabia is the most common destination, accounting for 33 percent of new hires. It also shows the average monthly wage in US dollars by destination, showing wide differences in the wages Filipinos earn in different locations. Since the microdata contain a few outliers on wages, we trim at the first and ninety-ninth percentiles before taking means.

⁷See also Bils (1985); Shin (1994); Devereux and Hart (2006); Martins (2007); and Carneiro, Guimarães, and Portugal (2012).

TABLE 1—TOP 20 MIGRANT DESTINATIONS

	% of total	New contracts per year		Monthly wages (US\$)			
Destination	contracts (1992–2009)	Mean	SD	Mean	SD of mean	Median	SD of median
1. Saudi Arabia	33.10	78,860	25,832.76	372.74	29.60	341.49	29.90
2. Japan	16.04	38,205	24,348.10	1,779.99	164.16	1,789.53	172.00
3. Taiwan	14.53	34,621	14,218.45	499.77	26.98	496.51	28.67
4. United Arab Emirates	10.12	24,121	16,313.17	347.70	66.22	279.06	61.52
Hong Kong	8.92	21,247	4,392.89	470.68	43.25	453.56	29.63
6. Kuwait	4.97	11,848	8,248.60	349.66	88.05	292.80	85.58
Singapore	1.44	3,438	698.81	535.80	182.84	354.14	179.84
8. South Korea	1.44	3,435	2,699.86	514.18	202.45	483.67	215.76
9. Malaysia	1.38	3,298	3,086.11	386.53	152.79	273.58	123.48
10. Bahrain	1.32	3,190	1,529.07	377.31	67.25	306.01	54.71
 Brunei Darussalam 	1.29	3,069	1,250.75	372.28	63.18	308.53	56.86
12. Canada	1.05	2,496	2,770.76	1,016.12	305.69	985.59	284.59
13. United States	1.00	2,387	1,252.49	1,755.94	329.68	1,754.60	490.34
14. Israel	0.67	1,593	1,299.48	687.82	180.12	684.28	194.81
15. Oman	0.65	1,544	993.39	353.57	92.61	243.73	76.46
16. United Kingdom	0.60	1,432	1,706.25	1,474.97	536.70	1,446.43	612.99
17. Italy	0.49	1,171	1,305.01	681.70	131.32	611.35	108.79
18. Cyprus	0.35	844	543.51	353.68	76.86	317.11	55.92
19. Spain	0.31	729	599.73	683.56	224.11	656.01	213.78
20. Jordan	0.30	705	1,184.48	312.97	95.00	277.78	94.28

Notes: Qatar is omitted from the analysis due to lack of available GDP data. Wages are trimmed at the first and ninety-ninth percentiles.

Sources: POEA and authors' calculations

Since the microdata from POEA does not include skill levels, we calculate average education levels by occupation using the 1992–2003 Survey of Overseas Filipinos (SOF),⁸ and assign each occupation the average education level. We use this to then construct skill quartiles of aggregated occupational cells in our data. The average years of education for occupations in the first quartile is 11.6 years, 12.8 years for the second quartile, 13.8 years for the third quartile, and 15.1 years of education for the fourth quartile. One sees notable differences in the wages that a worker of a given skill level can earn across destination countries. For instance, OFWs in the first skill quartile in Saudi Arabia receive an average wage of US\$336 per month, whereas OFWs of the same skill level in Japan earn an average monthly wage of US\$1,505. This large variation across destination countries holds for the more skilled quartiles as well. The highest skilled workers in Saudi Arabia earn US\$553 per month, whereas in Japan these OFWs earn US\$1,661 on average each month.

⁸The Philippine Labor Force Survey is administered annually to a nationally-representative sample of households. The SOF is administered as a rider to the LFS if the household reports having any members working overseas, and contains information on migrant demographics, overseas occupation and location, and remittances (all reported by the household remaining behind in the Philippines).

B. Macro Data

Data on annual real GDP (constant 2000 US\$) over the sample period were obtained from the World Development Indicators database and the Central Intelligence Agency (CIA 2008–2009) World Factbook. These data are then matched to the POEA data based on destination country and year of departure. Over the sample period, destination countries in our sample experience vastly different rates of GDP growth as well as varied fluctuations in growth. For instance, during the Asian Financial Crisis, Asian countries such as Japan or South Korea faced dramatic reductions in GDP growth, whereas Middle Eastern destinations such as Bahrain or Kuwait maintained fairly stable growth. Online Appendix Figure 1 plots real GDP growth in the top ten destinations for OFWs. In addition to the differences in growth rates in 1997 during the Asian Financial Crisis, another period of high volatility was during the Global Financial Crisis, which by 2009 had affected some destinations more than others.

C. Sample Restrictions

The sample is restricted to include only countries with a positive number of OFWs in every year and to countries with GDP data available in each year, in order to create a balanced panel. These sample restrictions result in 54 destinations included in the analysis. Online Appendix Table 1 presents a list of all included destination countries.

III. Results

A. Aggregate Impacts

In order to measure the impact of fluctuations in GDP at destination on the flows of Filipino migrants and the wages paid, we estimate the following equation for destinations j = 1, 2, ..., 54 and time periods t = 1992, ..., 2009:

(1)
$$\log (M_{jt}) = \beta_0 + \beta_1 \times \log(GDP_{jt}) + \alpha_j + \gamma_t + \varepsilon_{jt},$$

where M_{jt} is the number of Filipino migrants leaving on new contracts to country j in year t; GDP_{jt} is the level of real GDP in country j in year t; α_j are destination country fixed effects; γ_t are time period fixed effects; and ε_{jt} is the error term for country j in year t. Standard errors are clustered at the level of the destination country. M_{jt} is replaced with mean or median wages in order to test the response of wages earned by these migrants to GDP. We estimate equation (1) for all migrants, and then separately by gender.

Time fixed effects control for any aggregate changes occurring in the world economy, as well as for any Philippines-specific changes that are affecting the overall supply of migrants. Country fixed effects remove time-invariant effects in

⁹Note this also controls for any overall devaluation or appreciation in the Philippine exchange rate as well.

Table 2—Responsiveness of the Quantity and Wages of New Migrants to GDP

	log quantity of new migrant contracts			ean wages o migrants	log median wages paid to migrants	
	Base specification	Occupation shares constant	Base specification	Occupation shares constant	Base specification	Occupation shares constant
Panel A. All migrants log GDP	1.522*** (0.501)	1.340*** (0.375)	-0.041 (0.137)	-0.113 (0.124)	-0.063 (0.158)	-0.142 (0.148)
Observations	972	972	967	967	967	967
R^2	0.863	0.914	0.762	0.842	0.738	0.813
Mean of the dependent variable (levels)	4,482	4,482	794	794	737	737
Panel B. Female migrant	t's					
log GDP	1.983*** (0.621)	2.067*** (0.666)	0.043 (0.209)	-0.135 (0.174)	-0.045 (0.226)	-0.227 (0.201)
Observations	972	972	901	901	901	901
R^2	0.903	0.912	0.767	0.838	0.756	0.819
Mean of the dependent variable (levels)	2,814	2,814	738	738	706	706
Panel C. Male migrants						
log GDP	1.148** (0.527)	1.276*** (0.438)	-0.027 (0.116)	-0.097 (0.112)	-0.019 (0.147)	-0.096 (0.146)
Observations	972	972	930	930	930	930
R^2	0.835	0.861	0.699	0.780	0.678	0.751
Mean of the dependent variable (levels)	1,668	1,668	871	871	816	816
<i>p</i> -value of equality of gender coefficients	0.2995		0.8767		0.6390	

Notes: The sample includes all new hires from 1992–2009. All regressions include country and year fixed effects. Robust standard errors clustered at the country level are in parentheses. The unit of observation is the country-year, and all wages are trimmed at the first and ninety-ninth percentiles to remove outliers. Regressions where the occupation shares are held constant control for the shares of OFWs in the top ten occupations for a country-year, plus the residual share for all other occupations. Countries are included if they have new hires and nonmissing GDP data in each year from 1992–2009.

Sources: POEA, WDI, and authors' calculations

destination countries, such as their overall policies towards migrant labor. The resulting identifying variation then comes from differences across destination countries in how GDP fluctuates over time. Since Filipino labor supply is small relative to the total labor forces of destination countries and we are looking at new contract labor movements, it seems reasonable to assume there is no reverse causation whereby changes in Filipino migrant numbers are driving GDP changes at destination. Online Appendix Figures 2 and 3 provide scatterplots of the underlying data.

We use these data to estimate equation (1), which differs from the scatterplots in also including year fixed effects in the regression. The results are shown in Table 2. Column 1, panel A shows the impact of GDP in a destination country on the total quantity of migrants going to that destination. For Filipino migrants as a whole this coefficient is 1.5 and significant at the 1 percent level. This elasticity suggests that if a destination country has 1 percent higher growth in output than other destination

^{***}Significant at the 1 percent level.

^{**}Significant at the 5 percent level.

^{*}Significant at the 10 percent level.

countries, 1.5 percent more Filipinos migrate on new contracts to this destination than migrate to other destinations. We can also not reject unit elasticity, whereby migrant numbers increase proportionately with GDP. Panels B and C then examine this elasticity separately by gender. The point estimates suggest slightly higher elasticity of migrant flows for females than males, but we cannot reject equality of the two.

By way of comparison, Kapsos (2005) estimates the aggregate national employment elasticities of growth in different regions around the world. He finds globally employment has an elasticity of between 0.3 and 0.4 with GDP, but is higher in services (0.6), and in the Middle East (1.1), with the elasticity for women in the Middle East being 2.2. Since migrant labor is likely to be easier for firms to adjust than native labor, it seems reasonable that our estimates are on average higher than those of natives, and more similar to the Middle East estimates (where much of the labor force is foreign workers).

In contrast, columns 3 and 5 of Table 2 show no significant response of migrant wages at destination to changes in GDP at destination. The coefficients are all close to zero, and in five out of six cases, slightly negative.

Taken together, our results suggest all adjustment to GDP shocks occurs through quantities and not wages, which is consistent with hypothesis 1 and the binding minimum wages model. This pattern is not consistent with the aggregate volatility of employment and hiring wages in developed countries, because both employment and hiring wages are procyclical to a similar degree. Therefore matching models of the macroeconomy that incorporate such procyclicality (e.g., Pissarides 2009) cannot account for the patterns in our data.

The results above show a strong elasticity of migrant numbers to GDP, with no responsiveness of migrant wages. In columns 2, 4, and 6 of Table 2, we check whether our results are being driven by the occupational mix of workers changing with the business cycle at destination. To do this, we control for the share of Filipino migrants that are in each of the ten most common occupations plus the residual share for each country-year. We see that the point estimates and their significance are very similar to the baseline results, so that we still obtain the same results even holding occupation fixed.

We consider several additional checks on the robustness of these results, which are reported in detail in the online Appendix. In particular, we show that quantity elasticities look similar if we use total hires or rehires instead of just new contracts; that contract length does not vary with GDP at destination; that the results are robust to using up to five lags of log GDP; that impacts are not different in recessions; and that the results are robust to a number of alternative criteria for the countries we include in the regressions. In addition, we show in US Census data that Filipino workers in the United States typically earn at least as much as native-born workers in the top Filipino migrant occupations, consistent with our claim that migrants face binding minimum wages in destination labor markets.

B. Heterogeneity of Impacts by Skill Level

Legally specified minimum wages in destination countries provide a reason why the market for legal low-skilled migrant labor does not clear, and for the large wage

TABLE 3—RESPONSIVENESS OF QUANTITIES AND WAGES TO GDP BY SKILL QUARTILE

	Lowest quartile	Second quartile	Third quartile	Highest quartile	<i>p</i> -value for test of equality
Panel A. Dependent variable: log	quantity of new cor	tracts in this skill	l level		,
log GDP	0.668 (0.821)	1.295** (0.496)	0.652 (0.494)	1.046*** (0.299)	0.7890
Country-year observations	717	904	832	861	
Panel B. Dependent variable: log	median wages paid	to workers in this	s skill level		
log GDP	-0.194 (0.123)	-0.309** (0.153)	0.020 (0.161)	0.101 (0.175)	0.6390
Country-year observations	708	893	817	823	
Panel C. Dependent variable: log	mean wages paid to	o workers in this s	skill level		
log GDP	-0.131 (0.111)	-0.257 (0.154)	0.060 (0.133)	0.151 (0.151)	0.8767
Country-year observations	708	893	817	823	
Percent of individual level observations	13.29	52.60	22.58	11.53	

Notes: The sample includes all new hires from 1992–2009. All regressions include country and year fixed effects. Robust standard errors clustered at the country level are in parentheses. The unit of observation is the country-year, and all wages are trimmed at the first and ninety-ninth percentiles to remove outliers. Skill quartiles are assigned as follows: average years of education by occupation are calculated from the 1992–2003 SOF; then quartiles are assigned based on aggregated occupational cells; these quartiles are then matched by occupation to the POEA microdata. Countries are included if they have OFWs in this skill category and nonmissing GDP data.

Sources: POEA, WDI, SOF, and authors' calculations

gains for low-skilled migrants documented in Clemens, Montenegro, and Pritchett (2008). However, the absolute income gains from emigration are even larger for high-skilled workers, with Gibson and McKenzie (2012) showing that very high-skilled workers from four developing countries increased their annual incomes by US\$40,000–\$75,000 by emigrating. Together with the institutional practices of restricting high-skilled immigrants to earn the prevailing wage, this suggests that the labor market for high-skilled workers also faces binding minimum wages, and that we may therefore also see most of the adjustment to output shocks at destination occurring via quantities rather than wages even for high-skilled workers.

We investigate this in Table 3, which estimates equation (1) separately by skill quartile. The lowest skill quartile includes occupations like construction workers, farmers, and welders; the second includes occupations like domestic helpers (maids), shop assistants, and cooks; the third occupations like supervisors, caregivers, and electricians; and the highest skill quartile includes occupations like engineers, teachers, and accountants. Panel A shows that the quantity of all four skill groups has a positive relationship with GDP, with no monotonic relationship in the point estimates across skill levels, and we cannot reject equality of impacts across the four skill groups. Low-, medium-, and high-skilled workers therefore all seem to experience a reduction in migrant numbers when GDP falls and an increase when it rises.

^{***}Significant at the 1 percent level.

^{**}Significant at the 5 percent level.

^{*}Significant at the 10 percent level.

Panels B and C of Table 3 examine the responsiveness of median and mean wages respectively to GDP by skill quartile. Again we cannot reject equality of coefficients across the four skill categories at conventional skill levels and find point estimates that are mostly small in magnitude and statistically insignificant. An exception is the second quartile, in which we see a significant negative coefficient on median wages of -0.31, and a similar-sized, but statistically insignificant coefficient on mean wages. This suggests wages for individuals in this skill range may actually fall when economic conditions at destination improve, although if we control for multiple hypothesis testing by multiplying the p-values by the number of separate outcome-group results being tested here for wages, then this result also would not be significant.

C. Does Who Migrates Change over the Business Cycle?

An alternative explanation for our results could be that the selection of who migrates is changing over the business cycle. In particular, in a market-clearing model with wages falling in a recession, we could observe in our data a reduction in the quantity of individuals migrating with no change in the mean wage paid to migrants if low-skilled, lesser-paid individuals experience more of a reduction in migrant numbers than higher-skilled individuals do during recessions. Indeed Solon, Barsky, and Parker (1994) show that such a change in composition leads aggregate wages in the United States to be less procyclical than indicated by longitudinal microdata.

We have shown above that our results are robust to controlling for occupational categories, and that we cannot reject that the elasticity of migrant quantities to GDP changes at destination is constant across skill quantiles. Nevertheless, as a further check, we use the Survey of Overseas Filipinos to directly examine whether the observable characteristics of who is migrating varies over the destination business cycle.

The Survey of Overseas Filipinos is an annual survey which asks a nationally-representative sample of households in the Philippines about members of the household who left for overseas in the past five years (see Yang 2008). Since it is remaining members of the household who are reporting on the absent migrants, only basic details of the characteristics of these migrants are available. However, it is the most comprehensive source available on the characteristics of new Filipino migrants, and importantly, does contain information on the destination country and whether this is the first time an individual is migrating or not for contract work. We use data from the 1992–2003 surveys.

In Table 4 we use this data to test whether the age, sex, marital status, place of origin in the Philippines, and education of new migrants going to a particular destination varies with GDP shocks at destination. To do this, we estimate equation (1) with these characteristics as the dependent variables. We find no statistically significant relationships between GDP changes at destination and the characteristics of the migrants going to that destination. The dependent variables are in levels, and GDP is in logs, so to interpret the magnitude of the coefficients, we divide them by 100 to get the impact of a 1 percent change in GDP at destination. Thus, not only are the coefficients not statistically significant, but we also see they are very small

	Mean age	Median age	Mean from Manila	Mean female	Mean married	Mean education	Median education
log GDP	-4.888 (6.623)	-6.835 (6.788)	-0.209 (0.236)	0.089 (0.287)	-0.097 (0.250)	2.391 (1.924)	2.257 (1.940)
Observations	369	369	369	369	369	331	331
R^2	0.258	0.272	0.357	0.528	0.253	0.305	0.291
Mean of dependent variable	32.07	31.30	0.18	0.47	0.48	13.12	13.27

Table 4—Does Who Migrates Vary with Economic Conditions at Destination? (Characteristics of first-time migrants in Survey of Overseas Filipinos)

Notes: The sample includes all first time contract hires in the Survey of Overseas Filipinos from 1992–2003. All regressions include country and year fixed effects. Robust standard errors clustered at the country level are in parentheses. The unit of observation is the country-year.

Sources: SOF, WDI, and authors' calculation

in magnitude. For example, 1 percent higher GDP at destination is associated with a decrease of 0.049 years in the mean age of migrants going to that destination and an increase of 0.024 years in the mean education of migrants going to that destination.

Thus, we find no evidence of large selectivity in which individuals migrate over the business cycle, at least in terms of these observable characteristics. We speculate that this composition effect is much less important for the type of migrant labor examined here than it is for examining the procyclicality to domestic business cycles of native wages because of the much greater distortions in global labor markets.

IV. Analysis of a Change in the Minimum Wage for Domestic Helpers

The results presented thus far are consistent with the case of binding minimum wages presented in Section IE. To bolster this interpretation of the results, we provide direct evidence (via a natural experiment) that minimum wages bind for an important subset of overseas jobs, domestic helpers (maids). In addition, this analysis will also rule out the possibility that true wages paid to OFWs are in fact changing in response to GDP shocks, but overseas employers are simply misreporting (failing to report changes in wages).

On December 16, 2006, the Philippine government implemented the Household Service Workers Reform, aimed at improving working conditions for Filipino migrants working as domestic helpers (maids). New policies associated with the reform included worker skill assessments, country-specific language and culture training, and the elimination of placement fees. One of the main components of the policy change was an increase in the minimum wage to US\$400 per month for

^{***} Significant at the 1 percent level.

^{**} Significant at the 5 percent level.

^{*} Significant at the 10 percent level.

¹⁰In the context of overseas Filipino work, individuals employed by a private household overseas for childcare and/or general household work are typically referred to as "domestic workers," "maids," "domestic helpers," or "household service workers."

domestic helpers. This doubled the prevailing wage rate of US\$200, especially in Middle Eastern countries. All employers hiring domestic helpers with visas issued after December 16, 2006 were required to pay a minimum wage of US\$400 per month.¹¹

Ezquerra (2008) describes the political economy of this reform, noting that it was sparked by the Israeli-Lebanon war of 2006, in which the Philippines' government acted to repatriate quickly its migrant workers, including a large number of domestic workers. This brought attention to the exploitative conditions that some of these workers experienced, with media accounts of a worker saying the war gave her the chance to escape a master who repeatedly raped her; a worker dying when trying to escape from her employer who wouldn't let her leave by tying together bedsheets and attempting to escape from a fourth floor balcony; and other returnees telling how they were made to sleep in little rooms with dogs, eat leftovers, and work until midnight.

However, the increase in minimum wages proposed under the reform also met strong resistance from recruitment agencies, arguing that this would have strong negative impacts on migrant numbers. Ezquerra (2008, p.148) describes how "Recruiting agencies and aspiring domestic workers held rallies in Metro Manila, in which the latter protested the upcoming reforms and expressed their willingness to work for less than US\$400." In response to this pressure the government dropped a plan to raise the minimum age for recruitment as a domestic employee to 25, and delayed the implementation of the reform until March 2007, but the reform was still implemented.

For a number of countries, this policy change thus led to an exogenous and large increase in wages for domestic helpers. Many destinations, such as Canada and Italy, already paid domestic helpers wages above US\$400 per month, and the reform had no effect on the wages paid in these locations. Similarly, even in countries facing a binding minimum wage for domestic helpers due to the policy change, this wage increase did not have a binding effect on the minimum wage paid to Filipino workers in other industries. Thus, using either countries or industries not subject to the minimum wage change as a control group, we can conduct a difference-in-differences analysis to test the effect of the increase in the minimum wage on the quantity of OFWs and on OFW wages.

A. Estimation Strategy

The treatment group in this analysis is composed of domestic helpers in 18 destination countries that faced a new binding minimum wage after the policy change. ¹² We create two comparison groups for the difference-in-differences analysis. First, we use domestic helpers in countries where the median wage prior to 2007 was greater than US\$400 (i.e., countries not affected by the policy change). Twenty-one

¹¹See http://www.poea.gov.ph/hsw/hsw_advisory1.html for details about all new regulations (accessed July 2011)

¹²Countries included in the treatment group are Bahrain, Brunei Darussalam, China, Cuba, Cyprus, India, Jordan, Kuwait, Malaysia, Oman, Pakistan, Palau, Saudi Arabia, Singapore, South Africa, Syrian Arab Republic, United Arab Emirates, and Republic of Yemen.

countries are included in this comparison group.¹³ Alternatively, we restrict the sample to include only the 18 destinations in which domestic helpers faced a higher minimum wage as a result of the policy change. We then create a comparison group of the other occupations in these countries.¹⁴ Our difference-in-differences analysis compares the treatment and control groups before and after the policy change in 2007.

When other countries not facing a binding minimum wage change are the comparison group, we measure the effect of the minimum wage change by estimating the following equation for destinations j = 1, 2, ..., 39 and time periods t = 2001, ..., 2009:

(2)
$$M_{jt} = \beta_0 + \beta_1 \times BindingMinimumWageChange_{jt} + \alpha_j + \gamma_t + \varepsilon_{jt}$$
,

where $M_{j,t}$ is the number of Filipino domestic helper migrants leaving on new contracts to country j in year t; $BindingMinimumWageChange_{j,t}$ is an indicator equal to one if the country j is one of the 18 countries facing a binding change in the minimum wage for domestic helpers, and t is 2007, 2008, or 2009 (after the introduction of the wage increase). α_j are destination country fixed effects; γ_t are year fixed effects; and ε_{jt} is the error term for country j in year t. Standard errors are clustered at the destination country level. The sample is restricted to the period 2001 to 2009.

When the comparison group is other occupations in these same low-wage countries, we estimate the following equation for destinations j = 1, 2, ..., 18, occupations s = 1, 2, ..., 17 and time periods t = 2001, ..., 2009;

(3)
$$M_{sjt} = \gamma_0 + \gamma_1 DomesticHelper_s$$

$$+ \gamma_2 BindingMinimumWageChange_{sjt} + \alpha_j + \gamma_t + \varepsilon_{sjt},$$

where $BindingMinimumWageChange_{sjt}$ takes value 1 for the domestic helper occupation after the domestic helper wage increase (years 2007–2009) and zero otherwise. $DomesticHelper_s$ is a binary variable equal to one for domestic helpers and zero for all other occupations. α_j are destination country fixed effects; γ_t are year fixed effects; and ε_{sjt} is the error term for occupations, country j in year t. Standard errors are clustered at the destination country level.

B. Results

Prior to estimating equations (2) and (3), we first confirm that our previous empirical results from estimation of equation (1) for all jobs in aggregate also holds for domestic helpers. Reestimating equation (1) for only domestic helper jobs, we

¹³Countries included in this comparison group are Australia, Austria, Belgium, Canada, Finland, France, Germany, Greece, Hong Kong, Israel, Italy, Japan, South Korea, New Zealand, Russia, Spain, Sweden, Switzerland, Taiwan, United Kingdom, and United States. Of the 22,380 domestic helpers in the comparison group in 2006, only seven workers have wages less than US\$400.

¹⁴There are 17 main occupations that encompass 88.7 percent of OFWs. We compare domestic helpers to these OFWs in the other 16 occupation groups.

	Full sample		Balanced panel		
	log count	log wages	log count	log wage	
Panel A. Nonminimum wage countries	as control				
Binding increase in minimum wage	-0.605* (0.341)	0.238*** (0.073)	-0.642 (0.392)	0.289*** (0.074)	
Observations	327	324	279	276	
R^2	0.918	0.907	0.910	0.942	
Panel B. Other industries as control					
Binding increase in minimum wage	-0.565** (0.225)	0.377*** (0.057)	-0.641** (0.240)	0.413*** (0.058)	
Domestic helper	2.172*** (0.521)	-0.711*** (0.068)	2.717*** (0.510)	-0.710*** (0.068)	
Observations	1,828	1,814	1,487	1,481	
R^2	0.648	0.377	0.649	0.370	

TABLE 5—EFFECT OF A CHANGE IN DOMESTIC HELPER MINIMUM WAGE ON DOMESTIC HELPER HIRING

Notes: The sample period is from 2001–2009. All regressions include country and year fixed effects. Robust standard errors clustered at the country level are in parentheses. In panel A, columns 1 and 2 have 39 job sites included in the estimates, and columns 3 and 4 use 31 job sites. In panel B, 18 job sites are included in the estimates in columns 1 and 2, and columns 3 and 4 use 14 job sites. Destination countries are included in the treatment group if they have a median wage less than US\$400 in 2006 (implying that the minimum wage change in 2007 would be binding for these destinations). Industries are included in the control group if they fall in one of the other top 16 occupations. Each of these occupations has >55,000 OFWs over the sample period, and together comprise 89 percent of all migration episodes over the sample period. All wages are trimmed at the first and ninety-ninth percentile to remove outliers.

Sources: POEA, WDI, and authors' calculations

find that the coefficient on log GDP in the regression for log counts, 1.138, is very similar to the corresponding coefficient in Table 2 and statistically significant at the 10 percent level. By contrast, the coefficient on log GDP in the wage regression is small in magnitude (-0.079) and not statistically significantly different from zero at conventional significance levels. This also corresponds to the wage result in Table 2 for all jobs in aggregate.

We then turn to estimation of equations (2) and (3); results are in Table 5. Column 1 shows the results for the full sample, including destination and year fixed effects. The coefficient on the indicator for a binding increase in the minimum wage is the causal impact of the minimum wage change on the quantity of migrants. When the comparison group is countries with a nonbinding minimum wage for domestic helpers (panel A), the impact of the minimum wage change is a reduction in employment of Filipino domestic helpers by 54.6 percent $(\exp(-0.605))$. When the comparison group is occupations other than domestic helpers (panel B), the impact is a 56.8 percent $(\exp(-0.565))$ reduction in employment of Filipino domestic helpers compared to other unaffected occupations.

Column 2 shows that this reduction in employment was accompanied by an increase in wages, both relative to the wages of domestic workers in countries that weren't affected by the new law, and relative to the wages of Filipino migrant workers in other occupations in the same destination country who were not affected by

^{***}Significant at the 1 percent level.

^{**}Significant at the 5 percent level.

^{*}Significant at the 10 percent level.

the new law. The increase in wages is estimated to be between 27 and 46 percent, depending on which comparison group is used.

To test the robustness of our results, in the last two columns we restrict the sample to only destination countries that hire domestic helpers in every year of the sample period (2001–2009). These results are similar to the full sample results: an increase in the minimum wage led to a decrease in the quantity of domestic helpers in countries where the minimum wage was binding and an increase in the wage paid to these workers.

If employers and workers were able to evade these regulations by reporting different wages on their official contracts to those paid in practice, then we would expect to see only a change in the stated wage, with no reduction in employment. The fact that we find a reduction in employment therefore provides clear support that the minimum wage binds in practice as well as in theory, and that setting high minimum wages increases the wages migrants earn at a cost of a reduction in the number of jobs available to them.

C. Substitutability of Filipino Workers with other Nationalities

The large quantity response to a change in minimum wages here is in contrast to many studies in the labor literature which have found zero or relatively limited employment responses to changes in the minimum wages (e.g., Card and Krueger 2000; Neumark and Wascher 2000; Dube, Lester, and Reich 2010). There are two possible reasons for this difference. First, the change we are examining is a much larger change, doubling the wage; by contrast, other studies have examined more marginal changes in minimum wages. If there are some fixed costs to firing workers, we might expect quantity responses to be more than proportionately larger for large changes in minimum wages. Secondly, and likely more important, ours is a context in which only some workers (Filipinos) are subject to the minimum wage change.

If Filipino workers were perfect substitutes for either native workers of the destination country, or for immigrant workers from other countries, then we would expect to see no Filipinos hired at all if minimum wage requirements imposed by the government of the Philippines were binding. However, there are reasons to think that Filipino workers are not perfect substitutes for either natives or migrants from other countries, so that the Philippine government is effectively engaging in monopolistic competition, and can charge a higher wage for its workers without losing all demand for these workers.

Policies that require employers of migrants to show that there is a lack of qualified local applicants at the prevailing wage are one reason that migrant workers are not perfect substitutes for local workers in the types of jobs for which migrant workers get hired. Indeed imperfect substitution between native workers and immigrants has been found in several recent empirical studies, and has been used to help explain the relatively limited impacts of immigration on the wages of native workers (Ottaviano and Peri 2012; Manacorda, Manning, and Wadsworth 2012). As such, we should not expect Filipino workers to be completely replaced by native workers if the Philippine government increases the wages its migrants must be paid.

It seems more likely that Filipino workers will be substitutable with immigrant workers from other countries than with native workers. We are unaware of any data comparable to the Philippine data we have which would enable us to look at how migrant numbers from competitor countries like Indonesia or Bangladesh reacted to the change made in Philippine policy. However, it does appear that the drop in Filipino numbers was at least in part made up by recruitment from other countries, with newspaper reports from countries like Qatar and the U.A.E. discussing recruitment efforts to bring in workers from nontraditional source countries like Bosnia, Morocco, and Sudan.¹⁵

Nonetheless, statements by recruiters and foreign government officials suggest that Filipino workers are seen to have certain desirable attributes which make them less than perfect substitutes with immigrant workers from other countries. First, Filipinos have English language proficiency, so that, for example, Hong Kong employers of housemaids are said to prefer Filipino workers over Malaysian and Indonesian workers (GMA news 2011). Second, worker training in the Philippines is often done with an overseas market in mind, so Filipino workers' skills are often more easily adapted to overseas markets (Visa Workforce undated). Third, Filipino workers are often touted as having better work ethics, being more sociable, and being better able to adapt to working abroad than nationals of many other countries (Karim 2008). As a result, we might not expect all Filipino workers to be replaced by workers from other countries when their relative wages rise, but still expect the quantity response to be larger than would be the case when the minimum wage change applied to all workers.

V. Conclusions

The view that very large distortions exist in the global market for migrant labor is widespread among economists (Clemens 2011 and Rodrik 2011). However, empirical work that identifies the specific nature of the distortions is scarce, in part due to severe data limitations. This paper's main contribution is to shed light on key distortions in the international market for migrant labor via analysis of migrant flows and contracted wages in a unique data resource: the Philippine government's database of contracted migrant worker jobs.

We estimate the impact of economic shocks in Filipino migrant destination countries on migrant flows to and wages that migrants are paid in those destinations, from 1992–2009. We find that percent changes in destination country GDP have a large (roughly one-to-one) impact on percent changes in Filipino migrant flows, but, by contrast, essentially zero impact on migrant wages. This pattern is consistent with the existence of a particular type of distortion in the market for international migrant labor: binding minimum wages. This pattern would not be predicted by market-clearing models of the labor market or binding immigration quotas. ¹⁶

¹⁵E.g. http://dohanews.co/post/15124268586/qatar-to-cast-wider-net-for-domestic-workers (accessed February 5 2013)

¹⁶The pattern is also contrary to the empirical procyclicality of both employment and hiring wages observed in a variety of developed economies (the destinations for many migrant workers), indicating that models of the macroeconomy that properly incorporate such procyclicality also cannot explain our results.

These minimum wages appear to be occupation-specific; we cannot reject that the effect of GDP fluctuations is similar across higher- and lower-skilled migrant occupational categories. We also provide direct evidence of the existence and impact of binding minimum wages for an important occupational category (domestic helpers), via analysis of a natural experiment that raised the mandated minimum wage for Filipino domestic helpers. This minimum wage increase led to increases in wages and reductions in migrant flows in this occupational category.

Direct evidence on the nature of distortions in the market for international migrant labor is important, because it clarifies the nature and interconnectedness of the welfare gains and losses associated with international migration. Wage floors for international migrant work mean that the wage gains for migrants that are able to secure work overseas are magnified. But at the same time, the total quantity of migrant labor is smaller than the market-clearing level. Furthermore, these same wage floors also lead migrant flows to be more sensitive to economic shocks in destination countries than they would be if markets cleared, since they lead all labor market adjustment to occur via quantities rather than wages.

Second, our evidence reveals important welfare consequences of policies instituted by destination countries as well as by the migrant-source countries that set wage floors for international migrant work. On the destination country side, the policies in question include the US federally-mandated minimum wage as well as H1-B rules requiring immigrant workers be paid the prevailing wage for the worker's occupation. On the migrant-source country side, the key policy relevant for our analysis is the Philippine government's regulation of labor contracts to ensure wages paid are above occupation-specific minimums. Our results reveal that these policies lead to higher wages for workers able to secure jobs, but reduce the number of jobs available and lead the burden of adjustment to destination-country economic shocks to fall entirely on the employment rather than the wage margin. Migrant-source countries such as the Philippines are for the most part powerless to change regulations setting minimum wages for migrants in destination countries, but they clearly can change their own regulatory practices related to migrant labor. Our results underline the negative economic consequences of source-country government efforts to impose wage floors for migrant workers.¹⁷

Our results are most directly relevant for international migrant labor from a particular source country, the Philippines. That said, the Philippines is one of the most important global sources of workers for the international contract labor market, and several other countries such as India, Bangladesh, and Sri Lanka are seeking to emulate Philippine government policies regulating and promoting international migrant work (Ray, Sinha, and Chaudhuri 2007). Our results documenting the negative economic consequences of minimum-wage regulations on the part of migrant source countries should be an important input in these countries' policy-setting process.

¹⁷That said, another rationale given for imposition of wage floors for occupational categories such as domestic helpers is that they lead lower-quality employers to exit the market, resulting in less physical, sexual, or mental abuse of workers. Our results cannot directly speak to such potential benefits of minimum wages in this context, and thus we cannot say whether this reform increased or reduced welfare.

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