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## Remittances, Capital Flows and Financial Development during the Mass Migration Period, 1870-1913

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Rui Esteves  
David Khoudour-Castéras

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**REMITTANCES, CAPITAL FLOWS AND FINANCIAL DEVELOPMENT  
DURING THE MASS MIGRATION PERIOD, 1870-1913****NON-TECHNICAL SUMMARY**

Sending money home before World War I was not much more complicated than today. Indeed, the business of international money transfer developed rapidly during the second half of the nineteenth century, to meet the growing demand from transatlantic migrants. The vast amounts of money transferred as a counterpart to the mass migration phenomenon in this period contributed to the development and penetration of financial services in host and sending countries. Concentrating on the latter, we study a sample of emerging economies in the European periphery, characterised by large emigration flows. Our results imply that remittances had a significant impact on financial development, measured as the ratio between total deposits in the banking system and GDP. We also find that migrants' transfers over the period 1870-1913 were more relevant in promoting the domestic financial sector than other international capital flows. This positive influence of emigrants' remittances can be explained through a triple process of institutionalization, densification, and "bankarization."

At the beginning of the mass migration period (c.1870-1913), most migrants used informal transfer channels. But as the number of migrants increased, a growing demand for official transaction means emerged. As a result, new actors appeared on the remittance market, giving rise to a gradual process of "institutionalization", that is, the implementation of a structured network of financial intermediaries. At the same time, financial institutions began to open more branches and to offer more services, which contributed to the "densification" of the European financial sector. New banks appeared to answer the growing demand for money transfers and to attract returnees' savings. Remittances also helped many families to gain access to banking services, thereby accelerating the "bankarization" process in European countries. The need for faster and safer international transfer channels increased the demand for account-to-account transfers, and consequently for deposit accounts both in sending and receiving countries. In addition, the recipients' ability to save part of their remittances, as well as the increasing number of returnees, favoured the development of savings accounts. Financial institutions adapted to this new clientele by offering attractive interest rates and, as a result, the number of account owners significantly increased.

Compared with recent findings, our results imply that the contribution of remittances

to financial development was higher in pre-1914 Europe than in today's developing countries. This can probably be attributed to the lower starting levels of development in the historical sample. However, the potential for positive spillovers from migration to financial development could still be enhanced in present-day developing economies through the adoption of policies aiming to promote financial democracy. In particular policies that facilitate the access to bank services, provide information about the remittance market, and guarantee the transparency of the financial system could act as catalysts.

**ABSTRACT**

This paper addresses the question whether the substantial financial flows received by emigration countries in the four decades running up to World War I contributed to domestic financial development in peripheral Europe. We quantify a sizable and significant relation between remittances and measures of development of the financial sector that is both larger than the contribution of other international capital flows and than the best estimates of the same relation in our days. Given that financial development is regularly included among the conditions for economic growth and catch up of developing nations, this paper adds to our understanding of the multiple impacts of the mass migration phenomenon on the economies of emigration countries.

*JEL Classification:* F24, N13, O16

*Key Words:* International Migration, Remittances, Financial Development

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**REMISES, FLUX DE CAPITAUX ET DEVELOPPEMENT FINANCIER  
A L'EPOQUE DES MIGRATIONS DE MASSE, 1870-1913****RESUME NON TECHNIQUE**

Envoyer de l'argent avant la Première Guerre mondiale n'était pas plus compliqué qu'aujourd'hui. Le transfert international d'argent s'est en effet développé rapidement au cours de la seconde moitié du dix-neuvième siècle, afin de répondre à la demande croissante des migrants transatlantiques. Les grandes quantités d'argent envoyées comme contrepartie des migrations de masse de l'époque ont contribué au développement et à la pénétration des services financiers dans les pays d'accueil et d'origine. En nous concentrant sur ces derniers, nous étudions un échantillon d'économies émergentes de l'Europe périphérique, caractérisées par des flux importants d'émigration. Nos résultats suggèrent que les remises ont eu un impact significatif sur leur développement financier, mesuré par le ratio entre la somme des dépôts bancaires et le PIB. Nous trouvons aussi que les transferts des migrants durant la période 1870-1913 jouaient un rôle plus important en matière de promotion du secteur financier national que les autres flux internationaux de capitaux. Cette influence positive des remises migratoires peut s'expliquer à travers un triple processus d'institutionnalisation, de densification et de bancarisation.

Au début de la période de migrations de masse (c.1870-1913), la plupart des migrants avaient recours à des canaux informels. Mais au fur et à mesure que le nombre de migrants augmentait, la demande de moyens de transaction officiels a fortement augmenté. De nouveaux acteurs sont alors apparus sur le marché des remises, donnant lieu à un processus graduel d'« institutionnalisation », c'est-à-dire de mise en place d'un réseau structuré d'intermédiaires financiers. Parallèlement, les institutions financières ont commencé à ouvrir de nouvelles succursales et à offrir de nouveaux services, ce qui a contribué à la « densification » du secteur financier européen. De nouvelles banques sont apparues pour répondre à la demande croissante d'envois d'argent et pour attirer l'épargne des émigrants de retour. Les remises ont aussi permis à de nombreuses familles d'accéder aux services bancaires, accélérant ainsi le processus de « bancarisation » dans les pays de départ. Le besoin de canaux internationaux plus rapides et plus sûrs a accru la demande de virements compte-à-compte et, par suite, de comptes de dépôts aussi bien dans les pays émetteurs que récepteurs. En outre, la capacité des familles à épargner une partie de ces remises ainsi que le nombre croissant de retours ont favorisé le développement des comptes d'épargne. Les institutions financières se sont adaptées à cette nouvelle clientèle en offrant des taux d'intérêt attractifs, ce qui a contribué à accroître

sensiblement le nombre de titulaires de comptes.

Comparés à des travaux récents, nos résultats montrent que la contribution des remises au développement financier était plus élevée dans l'Europe d'avant 1914 que dans les pays en développement contemporains. Ceci est probablement dû aux niveaux plus faibles de développement dans l'échantillon historique. Néanmoins, l'effet positif des migrations sur le développement financier pourrait encore être accentué dans les pays en développement contemporains par l'adoption de politiques visant à promouvoir la démocratie financière, notamment en facilitant l'accès aux services bancaires, en fournissant des informations sur le marché des transferts d'argent et en garantissant la transparence du système financier.

#### **RESUME COURT**

Ce document s'intéresse au fait de savoir si les flux financiers considérables reçus par les pays d'émigration au cours des quatre décennies qui ont précédé la Première Guerre mondiale ont contribué au développement financier de l'Europe périphérique. Nous montrons qu'il existait un lien fort et significatif entre les remises migratoires et les indicateurs de développement du secteur financier, lien plus important à la fois que celui caractérisant les autres flux de capitaux et que les estimations les plus hautes actuelles de ce lien. Dans la mesure où le développement financier constitue l'un des déterminants de la croissance économique et du rattrapage des nations en développement, ce document permet de mieux comprendre les impacts multiples du phénomène de migrations de masse sur les économies des pays d'émigration.

Classification *JEL* : F24, N13, O16

Mots-clefs : Migrations internationales, remises, développement financier

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**REMITTANCES, CAPITAL FLOWS AND FINANCIAL DEVELOPMENT  
DURING THE MASS MIGRATION PERIOD, 1870-1913**

*Rui ESTEVES*<sup>1</sup>  
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**INTRODUCTION**

One century ago or so, most European countries were “emerging markets”. Developed nations of the European “core,” namely, France, Germany and the United Kingdom, had an economy based in industry and exported capital to the “periphery.” The emerging economies of Eastern and Southern Europe, and also of the Scandinavian Peninsula, were still predominantly rural, and their relative success at catching-up was intimately dependent on their openness to trade and factor flows (O’Rourke and Williamson 1999). Like today’s emerging markets, capital inflows depended on economic fundamentals, macroeconomic stability and institutional quality (Clemens and Williamson 2004, Esteves 2007). Also as today, the high volatility of foreign capital flows was a factor of instability to emerging economies. But unlike contemporary developing nations that cope with increasingly restrictive immigration policies implemented by rich nations, pre-1914 European countries benefited from almost unfettered access to the international labor market. New World countries, which had a huge need for labor, notably acted as magnets for would-be migrants. As a result, labor movements played a more significant role than today in terms of international convergence (Taylor and Williamson, 2006).

Migration flows were also at the origin of large money transfers that emigrants sent to their relatives or brought back with them when returning home. Thus, remittances were often described as a sort of financial manna that fed the myth of a “land of plenty” on the other side of the Atlantic. Contemporary observers described how “*thousands and thousands of lire reached every year the most miserable houses [of Italy]. [There was] not a single slum that did not hide a treasury*” (Jarach, 1909, 258). They also underlined the role of this “*fantastic rain of gold*” (Massulo, 2001) in the receiving economy: “*That these private savings constitute a real source of strength to Greece cannot be doubted [...]. They mean strength to the state, as well as bread, olives, cheese, and wine for the inhabitants*” (Mears, 1923, 538). Even

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poets, such as the Norwegian Ingeborg Refling Hagen, referred to remittances: “*Hush, don’t fight kids; tomorrow the America boat will come with a dollar bill for us*” (quoted by Semmingsen, 1978). Some voices, however, rose up against these inflows. In Portugal, for instance, Freitas (1878, 115) worried that “*The country does not realize that it is necessary to develop the elements of our current life, instead of waiting shamefully for treasuries coming from far away.*” More radically yet, Molin (1905, 143) asserted that Swedes “*do not need gifts of mercy. Since we have been able to give those who have deserted their country an education [...] we shall no doubt also be able to support their poverty-stricken and abandoned fathers and mothers*” (quoted and translated by Hovde, 1934).

Beyond these fragmented testimonies, specific literature on remittances before World War I is relatively rare, and tends to focus on the amounts, determinants and transmission channels of such flows.<sup>3</sup> In addition, some country studies emphasize the socioeconomic impact of remittances in receiving countries. Alves (1993) describes remittances as subsidies for the Portuguese society that used them as safety nets in case of sickness, disability or old age. Hovde (1934) insists on the significant role of remittances in relieving poverty in Scandinavian countries. García López (1992) argues that remittances helped to promote Spanish economic growth until 1930, by spurring not only consumption and savings, but also investment in real-estate, trade activities, and manufacturing industry. Douki (2001) analyzes the contribution of emigration and remittances to the economic changes faced by the Lucca territory, in Northern Italy, before 1914. She argues that remittances brought about an improvement in living conditions, thanks to higher levels of consumption and the possibility to invest in new houses, land and livestock, or even in small businesses. Cinel (1991) and Massulo (2001) reach the same conclusion, although they underline significant differences between regions: in Northern Italy, remittances were widely invested in productive projects, while economic elites in the Mezzogiorno preferred financial applications.

The literature also underlines the role of remittances in both internal and external adjustment processes. Thus, Fenoaltea (1988) argues that migration outflows contributed not only to lowering unemployment levels in Italy before 1914, but also to financing current account deficits through remittances, especially after 1887, when international capital inflows began to decrease. In the same perspective, Esteves and

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<sup>3</sup> This is notably the case of Morys (2005) for Austria-Hungary; Mears (1923) for Greece; Balletta (1978) and Mittone (1984) for Italy; Semmingsen (1978) for Norway; Salazar (1916), Godinho (1978) and Mata (2002) for Portugal; García López (1992) and Prados de la Escosura (2006) for Spain; Lindhal, Dahlgren and Kock (1937) for Sweden; or still Magee and Thompson (2006a and 2006b) for the United Kingdom. Most of these works provide estimates of remittance flows before 1914.

Khoudour-Castéras (2009) show that workers' remittances helped to reduce the incidence of financial disturbances, namely sudden stops and current account reversals, among peripheral European countries integrated in the gold standard. This paper tries to advance the knowledge of the relevance of remittance flows before World War I, by analyzing their effects on financial development.

Recent literature relates remittances to financial development in developing countries, either by showing they are substitutes (Giuliano and Ruiz-Arranz, 2005; Calderón, Fajnzylber and López (2007) or complements (Aggarwal, Demirgüç-Kunt and Martínez Pería, 2006; Martínez Pería, Mascaró and Moizeszowicz, 2007). Our purpose is to investigate how significant were remittances in promoting late nineteenth century financial development in peripheral countries, with relatively limited access to international lending. Following up on the practice in the historical literature, we provide new estimates of remittances based on indirect evidence from the emigration process itself, combined with business cycles and contemporary information on average per capita remittances sent by nationals working abroad. We then relate remittance flows to measures of domestic financial development, such as the aggregate level of bank deposits. Our findings imply that there was a complementary relation between remittances and financial development, since an increase in the size of remittances had a positive impact in our measures of financial development. This suggests that international migration contributed to the catch-up process before 1914, by means other than wage convergence.

## **1. THE INTERACTION BETWEEN REMITTANCES AND FINANCIAL DEVELOPMENT**

Current discussions on the relation between workers' remittances and financial development are based on the question whether these two variables are substitutes or complements. On the one hand, the substitutability hypothesis puts forwards the idea that remittances partially offset the lack of financial development in emigration countries, by allowing poor people to invest in high-return projects despite their difficulties to obtain credit. On the other, the complementarity hypothesis claims that remittances and financial development foster one another. While a higher degree of financial development allows migrants to send money home faster, safer and above all cheaper, large amounts of remittances stimulate the interest of financial institutions and public authorities, bringing about higher levels of competition between financial intermediaries, as well as institutional reforms aiming at channeling remittances towards productive investment.

The main arguments in favor of the substitutability hypothesis are presented by Giuliano and Ruiz-Arranz (2005), who analyze the respective role of remittances and

the financial sector in promoting economic growth through investment. They show, based on a dataset of 73 developing countries over the period 1975-2002, that the impact of remittances on growth is stronger when financial markets are underdeveloped. By contrast, a high degree of financial development reduces the role of migrants' transfers in spurring investment. Remittances would indeed help to release credit constraints in countries where credit markets are imperfect. When potential investors, who lack credit histories and collateral assets, do not have access to formal sector loans, they can benefit from the financial contribution of a friend or a relative living abroad, namely through remittances. On the contrary, when capital market imperfections are limited and access to credit is readily available, small entrepreneurs can rely on the financial sector, and remittances are not as useful as in shallower financial systems. In some cases, when financial markets are highly developed, remittances can even have a negative impact on economic growth, in accordance with the moral hazard problem underlined by Chami, Fullenkamp and Jahjah (2005).<sup>4</sup> Likewise, Calderón, Fajnzylber and López (2007) find that the effect of remittances on growth is inversely related to financial depth in Latin American countries.

The complementarity hypothesis, as for it, argues that there is a positive interaction between remittances and financial development. High levels of financial development help migrants to send more money home and, in turn, a significant inflow of remittances contributes to promoting "financial democracy", that is, a better access of the population to services offered by financial institutions (Terry and Wilson, 2005). Such interaction should therefore lead to a virtuous circle, where an increase in remittances brings about a higher level of financial development that allows migrants to send more money. Thus, Mundaca (2005) and Bettin and Zazarro (2008) find that the more developed the financial sector, the higher the impact of remittances on growth. Efficient financial institutions would help to channel remittances towards productive investment projects, particularly in the case of small and medium-sized businesses. In other words, when remittances enter the official financial sector, mainly private banks, the potential credit supply increases allowing the financing of private initiatives at a lower cost. The effect of remittances on growth is even higher when used as collateral for loans from financial intermediaries.

Besides, financial development has positive repercussions on the amount of remittances sent by migrants to their home country, at least through formal channels. Most statistics on remittances tend to underestimate the real value of money transfers

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<sup>4</sup> Chami, Fullenkamp and Jahjah (2005) explain that there is a moral hazard problem between migrants and their relatives when the latter use remittances as an incentive to reduce labor supply.

to developing countries, either because they do not take into account money transfer operators, or more generally because they exclude informal channels (de Luna Martínez, 2005). It is therefore logical to assume that countries with better financial development should receive –or at least measure– more (official) remittances.<sup>5</sup> But beyond the mere accounting aspect, broad and deep financial markets contribute to reducing transfer costs, hence to increasing remittance flows, while a stable and reliable banking system leads migrants to prefer to send money through formal channels (Aggarwal, Demirgüç-Kunt and Martínez Pería, 2006). By contrast, inefficiencies in the financial sector, that is, delays in money transfers, high intermediation costs or unfavorable exchange rates tend to curb remittance inflows (Ratha, 2005).

In turn, remittances play a key role in strengthening financial markets in developing countries. In the first place, the increase in remittance flows gives rise to a gradual process of “institutionalization”, that is, the implementation of a structured network of professional financial intermediaries, both in sending and receiving countries. As migration flows increase, the demand for official transactions becomes more pressing, and new actors appear on the financial market. In the second place, the strong demand for remittance services contribute to the “densification” of the financial sector, through a double process of deepening and widening. In order to capture market share, banks and other money transfer operators open more branches, especially in emigration-intensive areas, and offer more services. This increase in competition results in a decline in intermediation costs, hence benefitting remittance recipients. In the third place, remittance inflows foster the “bankarization” process in emigration countries, as migrants and their families require faster and safer international transfer channels. This gives rise to a higher demand for deposit accounts in sending and receiving countries. If the average amount of remittances received by migrants’ families is above their immediate needs, there might also be an increase in the demand for savings deposits, even when remittances are sent through money transfers operators or informal channels. Furthermore, the fact that migrants’ families receive stable and significant amounts of money facilitates their access to loans, making possible the expansion of the domestic credit market.

Aggarwal, Demirgüç-Kunt and Martínez Pería (2006), using balance of payments data for 99 developing countries over the period 1975-2003, show that workers’ remittances have contributed to increase the ratio of bank credit to the private sector and the share of bank deposits expressed as a percentage of GDP. An increase by one

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<sup>5</sup> Most studies on the impact of remittances only take into account official remittances, and tend therefore to underestimate the real potential of migration flows in terms of development.

percent in the share of remittances to GDP would generate an increase of around 0.3 percent in the credit variable, and between 0.5 and 0.6 percent in the deposits variable. As an extension of this work, Martínez Pería, Mascaró and Moizeszowicz (2007) carry out a macro-level analysis, based on 25 Latin American and Caribbean countries for the period 1975-2003, that reveals that the impact of remittances on financial development is positive but smaller than in other developing regions. Recurrent crises in Latin America and the Caribbean would have created a climate of distrust in the banking system, explaining why remittance recipients are less prone to use the financial system than in other regions. Nevertheless, micro-level evidence from 19 household surveys conducted in 11 Latin American and Caribbean countries shows that the probability of using financial services, namely bank accounts and credit, is higher among households that receive remittances than for the rest of the population. Country-specific studies in El Salvador and Mexico confirm that remittance recipients are better “bankarized” than other people, but do not find evidence that remittances affect credit levels.

Although there is very little literature on the effects of remittances on the nineteenth century European financial sector, it is possible to infer that the substantial amount of money sent by migrants to their families contributed to promoting financial development, at least in the European periphery. As a matter of fact, Informal transfer channels were quite common during the nineteenth century. Migrants used to send banknotes or even coins through ordinary mail (Semmingen, 1978). They could also entrust an envelope with money inside to a friend or family member who traveled back home, or carry themselves their savings when coming back – temporarily or definitively– to their country of origin (Douki, 2001; Magee and Thompson, 2006a). But, as the migration phenomenon spread, remitters required more reliable transfer systems, and official intermediaries blossomed.

In Spain for instance, due to the lack of banks outside Madrid and Barcelona, many mercantile houses began to offer remittance distribution services, by setting up direct relations with trading partners overseas or by acting as local correspondents for national or even foreign banks. With time, these “merchants-bankers” (comerciantes-banqueros) specialized in money transfer operations and progressively turned into banking houses or became integrated into the branch network of larger banks (García López, 1992). In some cases, new banks appeared and specialized in remittance activities, as the Banco Hispano Americano and the Crédito Ibero Americano that opened their doors, respectively, in 1901 and 1903. In other cases, foreign banks entered the domestic market in order to take advantage of the remittance business, as it was the case of the Banco Español del Río de la Plata, an Argentinean bank that

opened several branches in Spain at the beginning of the twentieth century.

Financial reforms were sometimes encouraged by public authorities. In Italy, for instance, the 1901 law on emigration aimed at channeling remittances through official financial institutions, in order to protect migrants and their families against untrustworthy intermediaries, and to use these funds to finance development projects, both in the public and private sectors. One significant measure was to expand the post office network in rural areas, so that migrants' families could have a closer access to financial services (Douki, 2001).

Insofar as recipients were able to save part of the additional income represented by remittances, the need for savings accounts rose in proportion. This was encouraged by the strategy of many European migrants consisting in spending some years in the New World in order to accumulate enough money to buy a farm or a small business when going back home (Magee and Thomson, 2006b). Thus, in Portugal, the surge of new banking institutions was largely related to the inflow of remittances, but also to the return of emigrants, the so-called "Brazilians", who came back with a large amount of capital (Alves, 1993). Financial institutions, in particular savings banks, adapted to this new clientele by offering attractive interest rates (Douki, 2001). The upshot was a significant rise in the number of account owners. In Italy, the amount of postal accounts deposits went up from 323 million lire in 1890 to 2108 in 1913, that is, an increase of 553 percent in 23 years. During the same period, the share of emigrants' savings in total postal accounts went from 0.03 to 4.4 percent (authors' calculations based on Istat, 1958).

It is also worth mentioning that remittances helped migrants' families to free themselves from usury, a common practice in rural Europe. As underlined by Massulo (2001), Italian peasants depended on usurers for most of their financial decisions, including the decision to emigrate. Remittance inflows gave rise to an unusual availability of capital that contributed to reducing dependency in two ways: first, direct recipients could use this capital surplus to finance their investment projects, and did not require to get into excessive debt anymore; then, some people took advantage of their new economic situation to lend money to family members or neighbors with interest rates around 4-5 percent (as against 10 to 60 percent with usurers). As a result, there was a redistribution of economic power that radically changed local structures.

## 2. SENDING MONEY HOME BEFORE WORLD WAR I

Although technology was far from being as developed as it is today, sending money home before World War I was relatively rapid and safe. The Western Union Company, for instance, that represents the quintessence of today's remittance business, began its money transfer activities in 1871. At the same time, a structured network of financial intermediaries emerged both in receiving and sending countries, in order to answer the growing demand of immigrants in the New World. But if the phenomenon is well known, its magnitude is more difficult to apprehend.

Quantitative information on remittances before World War I is fragmented, both in terms of countries and periods. The existence of micro data, mainly coming from banks or post offices' balance sheets, helps to understand better the remitting patterns of emigrants in terms of transfer channels and periodicity. Yet, the pass-through from micro data to macro series faces several pitfalls. First, many migrants remitted money through informal channels, sending banknotes by mail, or entrusting money to acquaintances. They could also bring back their savings with them. Such "invisible" operations are therefore difficult to estimate. Second, there is no precise information on the number of emigrants who sent money home. Even though the annual flow of European emigrants to the New World is rather accurately known, it is quite complex to evaluate how many of them actually remitted, and for how many years. Third, not all migrants followed the same pattern at the moment of sending money to their friends or relatives, which complicates the task of estimating the average amount of remittances by country. This depended, among other factors, on the country where migrants went, on their professional activities, on their marital status, on who traveled with them. And obviously, the average amount of remittances was quite different between countries.

Despite these difficulties, several authors have provided estimates of remittances for European countries using migration figures and contemporary information on average remittances sent by emigrants, in particular through bank and post offices. This is the case for Austria-Hungary (Morys, 2005), Italy (Balletta, 1978; Morys, 2005), Portugal (Mata, 2002), Spain (Prados de la Escosura, 2006), and the United Kingdom (Magee and Thompson, 2006a). Details on such estimation methods are given in Table 1.

Table 1: Comparative remittance estimation methods

| Country         | Source                            | Period    | Stock of migrants abroad   | Average remittances per capita  |
|-----------------|-----------------------------------|-----------|--|---|
| Austria-Hungary | Morys (2005)                      | 1880-1913 | $M_t = \sum_{n=0}^4 E_{t-n} + S_t + R_t$ <ul style="list-style-type: none"> <li>- Emigration: number of Austro-Hungarian emigrants to the United States (more than 90% of overall emigration).</li> <li>- Seasonal workers: Austro-Hungarians working in Germany during the harvest period.</li> <li>- Returnees: temporary workers returning from overseas.</li> </ul>  | <ul style="list-style-type: none"> <li>- Estimates of money transfers from the U.S.: based on the value of postal orders and bank transfers between 1892 and 1913 (Morys extrapolates the value of postal orders to Hungary and bank transfers backward).</li> <li>- Estimates of money brought home by seasonal workers: based on Bartsch (1917).</li> <li>- Estimates of money brought home by returnees: one-year's salary (2000 crowns in 1913).</li> </ul> |
| Italy           | Baletta (1978)                    | 1876-1976 | $Rem_t = labor_t + transfers_t = O_t + m.o_t + p.o_t$ <ul style="list-style-type: none"> <li>- Labor income: remittances sent by temporary workers abroad (less than five years); Current unilateral transfers: remittances sent by permanent workers abroad (five years and more).</li> <li>- Remittances correspond to money sent through financial institutions and post offices (based on Istat, 1957).</li> <li>- "Invisible" operations are not included.</li> </ul> |   |
|                 | Morys (2005)                      | 1880-1913 | $M_t = \frac{1}{2} \sum_{n=0}^3 E_{t-n} + R_t$ <ul style="list-style-type: none"> <li>- Emigration: only 50% of Italian emigrants used to send money home.</li> <li>- Returnees: temporary workers returning from overseas or from other European countries.</li> </ul>  | <ul style="list-style-type: none"> <li>- Estimates of money transfers from the U.S.: based on what an Austrian worker would send home in 1911 (1000 crowns). Annual variations according to a loan index for the US.</li> <li>- Estimates of money brought home by returnees from overseas: 500 lire in 1911 (adjusted by a loan index for the US).</li> <li>- Estimates of money brought home by returnees from European countries: 50 lire.</li> </ul>        |
| Portugal        | Mata (2002)                       | 1865-1914 | $M_t = M_{t-1} + E_{t-1} - R_{t-1} - D_{t-1}$  | <ul style="list-style-type: none"> <li>- Estimate average: £20 in 1880; £15 in 1890; £16 in 1902; £12 in 1908; £7 in 1913.</li> <li>- Annual variations: according to exchange rate fluctuations between Brazilian and Portuguese currencies.</li> </ul>  |
| Spain           | Prados de la Escosura (2006)      | 1850-1935 | $M_t = \sum_{n=0}^4 E_{t-n} + E_t - R_{t-4}$ <ul style="list-style-type: none"> <li>- Return rate: 5 percent for migrants in the Americas; 60 percent in Algeria.</li> </ul>   | <ul style="list-style-type: none"> <li>- Estimate average: 400 pesetas per emigrant (1906-1910).</li> <li>- Annual variations: according to the nominal wage index and the peseta exchange rate in each immigration country.</li> </ul>   |
| Sweden          | Lindhal, Dahlgren and Kock (1937) | 1885-1930 | $Rem_t = 3(m.o_t America/Sweden - m.o_t Sweden/America)$   |   |
| United Kingdom  | Magee and Thompson (2006a)        | 1875-1913 | $Rem_t = \frac{\alpha [O_t + (1 + \theta_t)m.o_t]}{1 - \beta}$   |   |

Notes:  $M_t$  = stock of emigrants abroad on year  $t$ ;  $E_t$  = emigrants;  $S_t$  = seasonal migrants;  $R_t$  = returnees;  $D_t$  = deaths of emigrants abroad;  $Rem_t$  = remittances;  $m.o_t$  = money orders;  $p.o_t$  = postal orders;  $O_t$  = recorded remittances passing through financial intermediaries;  $\theta_t$  = ratio of  $p.o_t$  to  $m.o_t$ ;  $\alpha$  = share of non-commercial remittances out of the total;  $\beta$  = share of unreported remittances out of total.

For other European countries, there is very little available information and no published estimates. Fully aware of the pitfalls of such an exercise, we chose to estimate new remittance series for four countries (Finland, Greece, Sweden, and Norway), by following where possible the methods used by our predecessors. We can break down this exercise in two steps: first, the estimation of the stock of emigrants abroad likely to remit ( $M_t$ ); second, the calculation of the average amount of remittances sent by each emigrant ( $\overline{\text{rem}}_t$ ). The total amount of remittances in year  $t$  ( $\text{Rem}_t$ ) is then given by:

$$\text{Rem}_t = M_t \times \overline{\text{rem}}_t$$

The stock of emigrants likely to remit money from abroad is based on cumulated past migrant inflows (authors' calculations based on Ferenczi and Willcox, 1929). Naturally, we are aware that not all migrants sent money home, that a certain proportion of them came back after a few years or even months, and that the propensity to transfer remittances tended to decrease with the passing of time. In order to take heed of these facts, we consider, as usual in the literature, that most migrants sent money home only during the first five years.<sup>6</sup> After that, either they had come back or decided to settle permanently. Therefore, the number of remitters is defined as follow:

$$M_t = \sum_{n=0}^4 E_{t-n}$$

where  $E_t$  is the annual number of emigrants in year  $t$ .

Then, we calculate the annual level of remittances per capita from contemporary sources. Since the United States was, by far, the main destination of the nationals of these four countries (around 95% of Scandinavian emigrants went to the United States before World War I), we concentrate on references to emigrant money sent from there. Mears (1923) provides information on U.S. remittances to Greece through National Bank of Greece, the main money remitter, for the period 1913-1920. For the year 1913, 29 million drachmas entered Greece in the form of remittances. Bärlund (1992), based on information from Hoppu (1920), gives figures of remittances sent, both formally and informally, by Finnish emigrants from Canada and the United States between 1909 and 1913. The average annual amount of remittances was 21.9 million markkaas during the period. According to Semmingsen

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<sup>6</sup> See Simon (1960), Bärlund (1992), Morys (2005) and Prados de la Escosura (2006).

(1978), in 1905, around 20 million kroner were remitted to Norway, by the way of money orders, bank drafts or through steamship companies. Lastly, Beckman (1883; quoted by Hovde, 1934) estimates, using data from American banks, that Sweden received around 3 million dollars, that is, 11.2 million kroner, in 1882.

Basing ourselves in these data and our estimate of the annual number of remitters we calculate the average amount of remittances in Greece in 1913 (823.6 drachmas), in Finland in 1909-13 (300.5 markkaas on average), in Norway in 1905 (193.8 kroner), and in Sweden in 1882 (68.1 kroner). We then extrapolate the amount of remittances per capita during these reference years to the other years by calculating a nominal wage index of emigrants in the United States ( $w_t^d$ ):

$$w_t^d = w_t^{us} \cdot \theta^d \cdot e_t^{us/d}$$

where  $w_t^{us}$  is the nominal wage index in the United States (Williamson, 1995),  $\theta^d$  is the productivity ratio between immigrants and native workers in the United States (Hatton and Williamson, 2005)<sup>7</sup>, and  $e_t^{us/d}$  is the exchange rate between the dollar and each domestic currency (see data appendix).

As a result,

$$\overline{rem}_t = \frac{\overline{rem}_{ref}}{w_{ref}^d} \cdot w_t^d$$

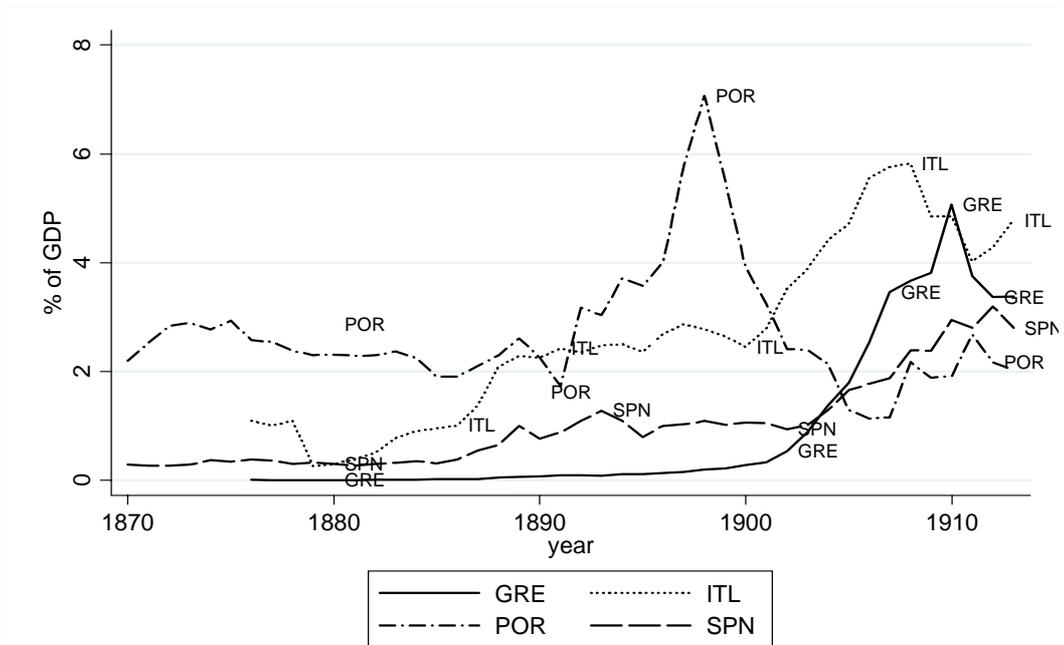
where  $\overline{rem}_{ref}$  and  $w_{ref}^d$  are, respectively, the average amount of remittances and the nominal index wage of emigrants in the United States in the reference year.

Finally, the total amount of remittances in year  $t$  is estimated from:

$$Rem_t = \sum_{n=0}^4 E_{t-n} \times \frac{\overline{rem}_{ref}}{w_{ref}^d} \cdot w_t^d$$

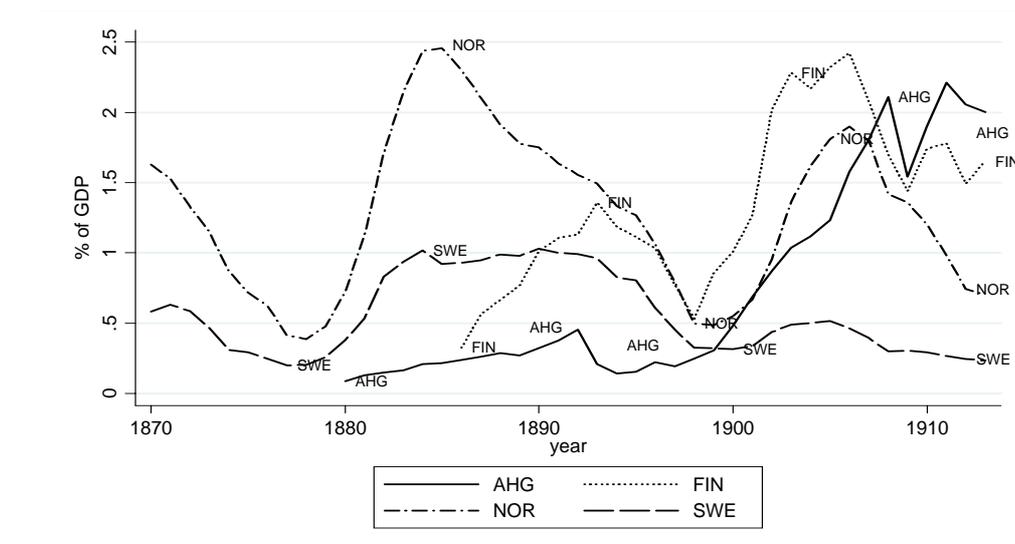
<sup>7</sup> The productivity ratio corresponds to “the earnings for groups of different origin relative to those of the native-born after twenty years in the United States” (Hatton and Williamson, 2005: 85). It is expressed as percent higher or lower than the native-born.

Figure 1: Remittances as a share of GDP in Southern Europe, 1870-1913



Source: author's calculations (see text).

Figure 2: Remittances as a share of GDP in Austria-Hungary and Scandinavia, 1870-1913



Source: author's calculations (see text).

Figures 1 and 2 illustrate remittances as a share of GDP between 1870 and 1913 for, respectively, four Southern European countries (Greece, Italy, Portugal, and Spain) and three Scandinavian countries (Finland, Norway and Sweden) plus the Austro-Hungarian monarchy. In the former group of countries the weight of remittances grew to very significant levels (Table 2). This is especially the case of Greece, Portugal, and Italy. By contrast, remittances had a lower contribution in the second group of countries, never reaching 2.5% of GDP in any year.

As shown by the coefficient of variation in Table 2, remittance inflows were more stable in the three Scandinavian countries than in other countries. Notwithstanding, remittances were subject to fluctuations, generally related to the economic activity in immigration countries. For instance, the U.S. downturn of 1908 brought about a strong increase in unemployment that had negative repercussions in terms of money transfers to Europe. Thus, between 1907 and 1909, total remittances dropped by 12 percent in Italy, 20 percent in Sweden, 21 percent in Norway, and 27 percent in Finland. Similarly, the decrease in the volume of remittances received by Portugal at the turn of the century (-65 percent between 1898 and 1902) was largely due to the economic and political problems in Brazil.

Table 2: Summary statistics of remittances

| Country                     | Average | Min   | Max   | Coef. of var. |
|-----------------------------|---------|-------|-------|---------------|
| Greece (1876-1913)          | 0.943   | 0.005 | 5.069 | 1.577         |
| Italy (1876-1913)           | 2.662   | 0.260 | 5.823 | 0.617         |
| Portugal (1870-1913)        | 2.698   | 1.138 | 7.071 | 0.423         |
| Spain (1870-1913)           | 1.021   | 0.268 | 3.200 | 0.808         |
| Austria-Hungary (1880-1913) | 0.743   | 0.089 | 2.212 | 0.967         |
| Finland (1886-1913)         | 1.350   | 0.316 | 2.424 | 0.439         |
| Norway (1870-1913)          | 1.291   | 0.388 | 2.458 | 0.449         |
| Sweden (1870-1913)          | 0.561   | 0.201 | 1.031 | 0.509         |

*Note:* values are as expressed as a share of GDP.

*Source:* authors' calculations.

Remittances tended also to play a countercyclical role in European economies. A drop in domestic economic activity was generally accompanied by an increase in remittances, while economic growth came with a reduction in flows. Thus, the strong

increase in GDP in Finland in 1897-98 (+10.4 and +10.1 percent) came with a drop in remittances by 37 percent between 1896 and 1898. By contrast, the economic recession of 1901-02 (-1.3 percent in 1901 and -2.5 percent in 1902) was followed by an increase by 93 percent between 1900 and 1902 (+55 between 1901 and 1902). Likewise, after the depression of the Norwegian economy in 1878 (-11.4 percent) and 1879 (-6.2 percent), remittances grew by 90 percent (1878-80). The period of economic growth during the second half of the 1890s brought about a significant decrease in remittances. Such pattern is also manifest in Spain, where the strong economic growth of 1877 (+10.3 percent) entailed a drop in remittances by 19 percent, while the crises of 1889 (-8.2 percent) and 1910 (-4.9 percent) were offset by an increase in remittances by, respectively, 42 and 18 percent.

### 3. EMPIRICAL MODEL

We will approach our empirical question, that is, the impact of remittances on pre-1914 European financial development, by estimating variants of the following model:

$$F_{i,t} = \beta_1 Rem_{i,t} + \beta_2 X_{i,t} + \alpha_i + \varphi_t + \varepsilon_{it}$$

in which  $F_{i,t}$  stands for a measure of financial development of country  $i$  in year  $t$ ,  $Rem_{i,t}$  is the amount of remittances received from abroad (normalized by GDP),  $X_{i,t}$  is a vector of controls, and  $\alpha_i$  and  $\varphi_t$  are country and time effects, respectively.

In computing financial development at a macro level, we followed two common measures in the literature: the ratio between narrow money (M1) and GDP and the ratio between total deposits in the banking system and GDP (King and Levine, 1993; Rajan and Zingales, 2003). Summary statistics of these variables by country are available on Tables 3 and 4.

There is considerable variation in time and, especially, across countries in these two variables. Furthermore, when measured by the deposits/ GDP ratio, financial development separates our sample in two groups of countries, with high and low financial development, which coincides with the separation between countries with high and low flows of remittances as a share of GDP (Table 2). This foreshadows our hypothesis, even though the association is less obvious when we use narrow money as proxy. The sources for these and all other variables can be found in the data appendix.

Table 3: Summary statistics of financial development (M1)

| Country                     | Average | Min    | Max    | Coef. of var. |
|-----------------------------|---------|--------|--------|---------------|
| Greece (1876-1913)          | 31.731  | 17.829 | 45.258 | 0.178         |
| Italy (1876-1913)           | 21.279  | 16.182 | 25.968 | 0.118         |
| Portugal (1870-1913)        | 19.534  | 16.153 | 23.733 | 0.096         |
| Spain (1870-1913)           | 25.359  | 20.301 | 35.729 | 0.141         |
| Austria-Hungary (1880-1913) | 12.603  | 10.321 | 16.965 | 0.099         |
| Finland (1886-1913)         | 31.731  | 17.829 | 45.258 | 0.178         |
| Norway (1870-1913)          | 7.184   | 5.821  | 8.243  | 0.073         |
| Sweden (1870-1913)          | NA      | NA     | NA     | NA            |

*Note:* values are as expressed as a share of GDP.

*Source:* authors' calculations.

Table 4: Summary statistics of financial development (Deposits)

| Country                     | Average | Min    | Max     | Coef. of var. |
|-----------------------------|---------|--------|---------|---------------|
| Greece (1876-1913)          | 17.440  | 6.663  | 51.161  | 0.702         |
| Italy (1876-1913)           | 38.171  | 27.776 | 48.406  | 0.161         |
| Portugal (1870-1913)        | 2.821   | 1.658  | 5.388   | 0.329         |
| Spain (1870-1913)           | 3.350   | 0.453  | 7.094   | 0.550         |
| Austria-Hungary (1880-1913) | 76.063  | 37.631 | 115.918 | 0.320         |
| Finland (1886-1913)         | 33.986  | 7.033  | 70.373  | 0.602         |
| Norway (1870-1913)          | 44.139  | 22.464 | 69.624  | 0.336         |
| Sweden (1870-1913)          | 44.735  | 5.975  | 70.885  | 0.425         |

*Note:* values are as expressed as a share of GDP.

*Source:* authors' calculations.

Both indicators aim at measuring the penetration of financial services in the economy. Ideally, we would like to further disaggregate our results by the type of financial instruments available to potential remitters, e.g. savings vs. demand or time deposits. For some countries we could separate between types of banking institutions (deposits in commercial and in savings banks), but not for others.<sup>8</sup> As a result we use

<sup>8</sup> See the data appendix for details.

here an aggregate measure of total deposits – in commercial and savings banks – as proxy for financial development.

As mentioned, we normalize our principal right-hand side variable of interest, the level of remittances (as estimated in section III), by recipient nations' GDP. In our base model we consider three groups of controls. To begin with, we control for country size and economic development, the former proxied by the natural log of GDP expressed in pounds sterling, and the latter by *per capita* GDP, also in sterling. Both variables are included to capture the presumption that the development of financial services has fixed costs, which are more easily defrayed in larger and/or richer nations. The level of *per capita* GDP may also perhaps account for a time-varying component of domestic institutional quality (not captured by country fixed effects). We will, however, return to this question in more detail later in the paper. A second group of variables controls for the degrees of trade and financial openness. Recent literature has emphasized the positive effects of openness on the development of local financial sectors that can tap into larger pools of savings and acquire superior technology and know-how via FDI (Chinn and Ito, 2002; Errunza, 2001; Levine 2001). We measure trade openness as the export share of GDP and financial openness by the current account also normalized by the recipient country's GDP.<sup>9</sup> Finally, we include a third group of variables that account for the well-known negative link between monetary instability (domestic and external) and financial development (Boyd, Levine and Smith, 2001). Participation in the gold standard and inflation rates are the indicators used for this purpose (Battilossi, 2006; Carosso and Sylla, 1991). The summary statistics of the covariates are reported in Table 5. As we do not have information on all variables for all countries over the whole period, our estimation will be based on unbalanced panels.

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<sup>9</sup> There are well-known limitations to the use of both *de jure* and *de facto* measures of financial openness (Kose *et al.* 2006; Obstfeld 2009). We do not have information on *de jure* controls on capital inflows, which were probably very limited in the period and countries we are studying. We therefore chose a measure of *de facto* openness based on the current account, because we could not find reliable series for the capital account of the majority of countries included in our sample.

Table 5: Summary statistics of covariates and instruments

| <b>Variable</b>               | <b>N</b> | <b>Average</b> | <b>Max</b> | <b>Min</b> | <b>St. Dev.</b> |
|-------------------------------|----------|----------------|------------|------------|-----------------|
| M1/GDP                        | 293      | 19.71737       | 45.2584    | 5.820954   | 8.425367        |
| Deposits/GDP                  | 321      | 30.97866       | 115.9184   | 0.453309   | 26.95324        |
| Log GDP                       | 336      | 4.783804       | 7.832559   | 2.180193   | 1.405348        |
| GDP <i>per cap.</i>           | 336      | 21.96279       | 88.06752   | 4.753349   | 14.91393        |
| Inflation                     | 352      | 0.3523         | 31.9444    | -95.5124   | 7.6662          |
| Gold standard                 | 352      | 0.5170         | 1.0000     | 0.0000     | 0.5004          |
| Exports/GDP                   | 342      | 13.5013        | 26.76169   | 3.017241   | 5.761683        |
| Current account/GDP           | 342      | -3.94838       | 5.568702   | -18.2213   | 4.270243        |
| Polity                        | 352      | -1.1136        | 10.0000    | -10.0000   | 6.2282          |
| Duration                      | 352      | 36.8296        | 102.0000   | 0.0000     | 27.8168         |
| Executive openness            | 352      | 2.4489         | 4.0000     | 1.0000     | 0.9944          |
| Exec. competitiveness         | 352      | 1.3977         | 3.0000     | 1.0000     | 0.7741          |
| Exec. Constraints             | 352      | 4.6364         | 7.0000     | 1.0000     | 2.1024          |
| Participation competitiveness | 352      | 2.7472         | 5.0000     | 0.0000     | 1.3102          |
| Creditors rights              | 352      | 1.5000         | 2.0000     | 1.0000     | 0.5007          |
| WGDP                          | 334      | 188.0108       | 517.3830   | 4.2614     | 147.3228        |
| WGDPpc                        | 334      | 3.0293         | 5.3007     | 0.6212     | 1.2819          |
| Wexch.                        | 270      | 1.0118         | 2.2561     | 0.2138     | 0.2161          |

*Notes:* Wexch is the weighted index of exchange rates of destination currencies against sterling, used as instrument (base 1913=1). Freight is the Isserlis's (1938) index of tramp shipping freight, also used as instrument (base 1869=100).

The first set of results for this model can be read from Table 6. The estimation method is pooled OLS with robust standard errors. We also adjusted the model using panel techniques (within estimators) but the point estimates (and significance levels) of the coefficients were virtually identical to the pooled model because the panel variance component was consistently insignificant.

Table 6: Results (base model)

| Dependent       | M1/GDP                 |                         |                         | Deposits/ GDP           |                           |                           |
|-----------------|------------------------|-------------------------|-------------------------|-------------------------|---------------------------|---------------------------|
|                 | (1)                    | (2)                     | (3)                     | (4)                     | (5)                       | (6)                       |
| Constant        | 23.2349***<br>(2.6133) | 40.1834***<br>(10.7174) | 51.3205***<br>(12.9373) | -84.3087***<br>(4.2542) | -144.5105***<br>(12.2754) | -156.7638***<br>(19.0250) |
| Log(GDP)        | 0.053<br>(0.5397)      | -6.7650***<br>(2.2527)  | -8.6388***<br>(2.5275)  | 6.9184***<br>(0.9096)   | 23.2764***<br>(2.3854)    | 23.4975***<br>(3.2087)    |
| GDP per capita  | -0.0207<br>(0.0580)    | 0.4516***<br>(0.0957)   | 0.4706***<br>(0.1188)   | 1.1267***<br>(0.0634)   | 0.6038***<br>(0.1314)     | 0.8218***<br>(0.1397)     |
| Inflation       | 0.0213<br>(0.0385)     | 0.0246<br>(0.0194)      | 0.0252<br>(0.0259)      | -0.1258<br>(0.0942)     | -0.1153***<br>(0.0410)    | -0.044<br>(0.0527)        |
| Gold standard   | -8.6764***<br>(1.1833) | 0.8366<br>(0.6890)      | 1.3854*<br>(0.7688)     | 10.0826***<br>(1.5226)  | 9.3115***<br>(1.4233)     | 11.4709***<br>(1.3945)    |
| Exports/ GDP    | 0.0676<br>(0.0971)     | 0.2637*<br>(0.1498)     | 0.2134<br>(0.1808)      | 3.2565***<br>(0.1144)   | 0.9041***<br>(0.1640)     | 1.0702***<br>(0.1791)     |
| Current account | 0.1444<br>(0.2115)     | -0.0101<br>(0.1243)     | 0.023<br>(0.1535)       | -1.2655***<br>(0.1964)  | -0.2105<br>(0.1557)       | -0.4072**<br>(0.1645)     |
| Remittances     | 0.5993<br>(0.4437)     | 0.5024***<br>(0.1800)   | 0.271<br>(0.2147)       | 2.6299***<br>(0.4918)   | 1.7495***<br>(0.4511)     | 1.8696***<br>(0.4054)     |
| Country FE      | No                     | Yes                     | Yes                     | No                      | Yes                       | Yes                       |
| Year FE         | No                     | No                      | Yes                     | No                      | No                        | Yes                       |
| N               | 265                    | 265                     | 265                     | 299                     | 299                       | 299                       |
| R <sup>2</sup>  | 0.267                  | 0.877                   | 0.891                   | 0.872                   | 0.936                     | 0.960                     |

Notes: Robust standard errors in parenthesis. \*\*\* (\*\* [\*] ) Coefficient significant at 1 (5 [10] ) %.

The control variables generally behave as expected. Richer nations do exhibit higher levels of financial development. The size of the economy also has the expected positive impact, except when we measure financial development by narrow money, which however, is probably not the best proxy, as it excludes some of the sources of longer-term financing of financial institutions (time and savings accounts). Inflation is detrimental to financial development, but loses significance once we introduce country and time effects. Monetary stability, proxied by the participation in the gold standard does have the predicted (and sometimes very strong) positive effect on financial development. Openness also shows up with the expect sign, both when measured by export intensity and the current account. The estimated effect is again

weaker in specifications that use M1 as dependent variable.

The size of remittances has a clear impact on financial development with some interesting patterns. The size of the coefficient is much larger when using total deposits as the left-hand side variable than M1. This implies that emigrant money was channeled into the financial sector primarily through longer-maturity accounts. Interestingly, the size of the coefficient of remittances is consistently larger than the estimated impact of aggregate capital flows, as measured by the current account balance. Even though, it is difficult to distinguish between remittances (an item of the current account) and the items of the financial account, the smaller coefficient of the latter implies that other capital inflows (portfolio or FDI) contributed less to the development of the domestic financial sector than remittances. These estimates are also larger than the evidence on contemporary trends. Indeed, we estimate a marginal effect of the ratio deposits/GDP to remittances of about 1.7 to 1.8, while Aggarwal, Demirgüç-Kunt and Martínez Peria (2006), using a sample of 99 developing nations between 1975 and 2003, find an effect on only 0.5 to 0.6.

We now consider two variations on this model. The first one explores the possibility that the effect of remittances on financial development may be non-linear. Table 7 reestimates the full model with country and time effects for two alternative non-linear specifications. In columns (1)-(2) we introduced an interaction term for the level of remittances to mark the period when this level rose above 1% of GDP in our sample of countries (1888 onwards). Contemporary and historical literature has found some evidence of threshold effects for the impact of remittances (Bugamelli and Paternò, 2006; Esteves and Khoudour-Castéras, 2009). In columns (3)-(4) we simply added a quadratic remittances term.

Both variants testify to substantial nonlinearities whereby the impact of remittances on financial development abated over time or as the country became richer. Irrespective of the choice of dependent variable (M1 or total deposits) the results in columns (3) and (4) imply a maximum impact of remittances on financial development when the former are in the proximity of 4% of GDP. The results for the remaining controls are not qualitatively changed.

Table 7: Results (nonlinearities)

| Dependent                | M1                      | Deposits                 | M1                      | Deposits                 |
|--------------------------|-------------------------|--------------------------|-------------------------|--------------------------|
|                          | (1)                     | (2)                      | (3)                     | (4)                      |
| Constant                 | 54.8737***<br>(12.5612) | -188.260***<br>(20.0720) | 46.0534***<br>(12.5506) | -173.979***<br>(19.5141) |
| Log(GDP)                 | -9.0659***<br>(2.4295)  | 27.7408***<br>(3.2946)   | -7.7515***<br>(2.4473)  | 26.2168***<br>(3.2103)   |
| GDP <i>per capita</i>    | 0.4690***<br>(0.1192)   | 0.8119***<br>(0.1388)    | 0.4342***<br>(0.1132)   | 0.7790***<br>(0.1305)    |
| Inflation                | 0.0265<br>(0.0259)      | -0.0502<br>(0.0503)      | 0.0288<br>(0.0231)      | -0.0381<br>(0.0517)      |
| Gold standard            | 1.7516*<br>(0.9267)     | 7.2413***<br>(1.4912)    | 0.7793<br>(0.7340)      | 10.4932***<br>(1.3542)   |
| Exports/ GDP             | 0.2146<br>(0.1795)      | 1.0252***<br>(0.1830)    | 0.2395<br>(0.1638)      | 1.0605***<br>(0.1630)    |
| Current account          | 0.0596<br>(0.1605)      | -0.8214***<br>(0.1726)   | -0.1252<br>(0.1507)     | -0.6081***<br>(0.1573)   |
| Remittances              | -0.2841<br>(0.5909)     | 8.0721***<br>(1.0160)    | 2.8417***<br>(0.6614)   | 5.9437***<br>(1.1139)    |
| Remitt*year>1887         | 0.557<br>(0.5718)       | -6.1622***<br>(0.9358)   |                         |                          |
| Remittances <sup>2</sup> |                         |                          | -0.4458***<br>(0.1220)  | -0.7284***<br>(0.2410)   |
| Country FE               | Yes                     | Yes                      | Yes                     | Yes                      |
| Year FE                  | Yes                     | Yes                      | Yes                     | Yes                      |
| N                        | 265                     | 299                      | 265                     | 299                      |
| R <sup>2</sup>           | 0.892                   | 0.965                    | 0.901                   | 0.962                    |

Notes: Robust standard errors in parenthesis. \*\*\* (\*\* [\*] ) Coefficient significant at 1 (5 [10] ) %.

The second variation extends the base model by directly including indicators of local institutional quality. In so doing we are once more limited by the availability of data, in this case, by the relative difficulty in finding historical measures of the quality of economic institutions. Consequently, the bulk of variables added to the models of columns (1)-(2) in Table 8 refer to political institutions. We extracted six variables from the Polity IV database: the polity democracy score, the durability of political regimes (in years since last change), three scores referring to the executive power –

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competitiveness (Exec. comp.) and openness of nomination (Exec. open.), and constraints (Exec. const.) on the exercise of this power – and a final score for the degree of competitiveness in political participation (Part. comp.). One would expect a positive association between the five scores and measures of financial development, along the lines of the political economy of financial regimes (Haber, Razo and Maurer, 2003). Because the relation between tenure and institutional quality is unclear, we also interacted the duration of the political regimes with the measure of executive constraints.

In Table 8, the coefficient of remittances is still strongly significant and has a size very similar to Table 4. The political markers generally have correct signs, but their effect is harder to identify when we break up the types of deposits. Stability of political regimes also shows up as having a positive impact on financial development. The only counterintuitive results are those of the model for M1, which reinforces our doubts about the usefulness of this variable as indicator of financial development. Constraints on the executive (a common measure of the quality of political institutions) are mostly insignificant, as well as the stability of political regimes.

In the last two columns we experimented with a model controlling for the quality of economic institutions. Since we do not have historical measures, we included a popular *contemporary* measure of economic institutions – the index of creditor’s rights compiled by Djankov, McLiesh and Shleifer (2006). Given that all nations in our sample come from a civil law tradition, we cannot investigate the related hypothesis about the persistence of “legal origins” (La Porta et al., 1997). Notwithstanding, if we are to interpret the results of the coefficient on creditor’s rights based on information collected almost a century after our sample period, we do need to assume a remarkable degree of persistence in the quality of legal orderings dealing with economic activity. Since this is not the topic of this paper, we only notice here the very large and significant estimates for this coefficient which, however, do not affect the direct impact of remittances on financial development. The sign of the coefficient on contemporary creditor’s right is also counterintuitive.

Table 8: Results (political and economic institutions)

| Dependent        | M1                     | Deposits                 | M1                   | Deposits               |
|------------------|------------------------|--------------------------|----------------------|------------------------|
|                  | (1)                    | (2)                      | (3)                  | (4)                    |
| Constant         | 66.465***<br>(13.8674) | -121.846***<br>(18.4573) | 40.48***<br>(7.2792) | -129.60***<br>(9.7492) |
| Log(GDP)         | -9.695***<br>(2.6407)  | 10.381***<br>(3.3698)    | -8.64***<br>(2.5275) | 23.498***<br>(3.2087)  |
| GDP per capita   | 0.4036***<br>(0.1339)  | 0.7092***<br>(0.1512)    | 0.471***<br>(0.1188) | 0.8218***<br>(0.1397)  |
| Inflation        | 0.0228<br>(0.0253)     | -0.0223<br>(0.0461)      | 0.0252<br>(0.0259)   | -0.044<br>(0.0527)     |
| Gold standard    | 1.3842*<br>(0.7107)    | 10.854***<br>(1.3257)    | 1.3854*<br>(0.7688)  | 11.471***<br>(1.3945)  |
| Exports/ GDP     | 0.3196*<br>(0.1772)    | 1.253***<br>(0.1747)     | 0.2134<br>(0.1808)   | 1.070***<br>(0.1791)   |
| Current account  | -0.1275<br>(0.1631)    | -0.764***<br>(0.1560)    | 0.023<br>(0.1535)    | -0.4072**<br>(0.1645)  |
| Remittances      | -0.0847<br>(0.2398)    | 1.674***<br>(0.3900)     | 0.271<br>(0.2147)    | 1.8696***<br>(0.4054)  |
| Polity           | 0.657<br>(0.4581)      | -3.983***<br>(0.8406)    |                      |                        |
| Durable          | 0.0433<br>(0.0333)     | -0.0973**<br>(0.0477)    |                      |                        |
| Dur.*Exec. cons. | 0.0138*<br>(0.0073)    | 0.0275<br>(0.0179)       |                      |                        |
| Exec. Comp.      | -6.7043**<br>(2.7741)  | 15.839***<br>(4.2640)    |                      |                        |
| Exec. Open.      | 5.1444***<br>(1.5798)  | 0.1358<br>(1.9111)       |                      |                        |
| Exec. const.     | -1.4179**<br>(0.5499)  | 1.5173*<br>(0.8868)      |                      |                        |
| Part. comp.      | -1.6793**<br>(0.7229)  | 5.6502***<br>(1.0961)    |                      |                        |
| Cred. rights     |                        |                          | 5.4217<br>(4.0585)   | -13.5835**<br>(6.4946) |
| Country FE       | Yes                    | Yes                      | Yes                  | Yes                    |
| Year FE          | Yes                    | Yes                      | Yes                  | Yes                    |
| N                | 265                    | 299                      | 265                  | 299                    |
| R <sup>2</sup>   | 0.909                  | 0.972                    | 0.891                | 0.960                  |

Notes: Robust standard errors in parenthesis. \*\*\* (\*\* [\*]) Coefficient significant at 1 (5 [10]) %.

#### 4. ROBUSTNESS CHECKS

There are two main concerns to address in running our model. First, with a small sample in the cross-section dimension we need to worry about the possibility that the results are driven by outlier observations. We took this into consideration by using Li's (1985) robust estimation method. The results in Table 9 are mostly similar to the base model (Table 6).

Table 9: Robustness (outliers)

| Dependent             | M1<br>(1)               | Deposits<br>(2)           |
|-----------------------|-------------------------|---------------------------|
| Constant              | 62.5964***<br>(11.0654) | -150.0362***<br>(21.1376) |
| Log(GDP)              | -11.5964***<br>(1.6803) | 23.4864***<br>(3.3225)    |
| GDP <i>per capita</i> | 0.6500***<br>(0.0583)   | 0.7658***<br>(0.1206)     |
| Inflation             | 0.0346<br>(0.0280)      | -0.0372<br>(0.0521)       |
| Gold standard         | 0.2322<br>(0.5497)      | 9.5984***<br>(1.1877)     |
| Exports/ GDP          | 0.2257**<br>(0.0951)    | 1.1412***<br>(0.1873)     |
| Current account       | 0.0986<br>(0.0851)      | -0.3800**<br>(0.1716)     |
| Remittances           | 0.1087<br>(0.2214)      | 1.9351***<br>(0.4876)     |
| Country FE            | Yes                     | Yes                       |
| Year FE               | Yes                     | Yes                       |
| N                     | 265                     | 299                       |
| R <sup>2</sup>        | 0.908                   | 0.964                     |

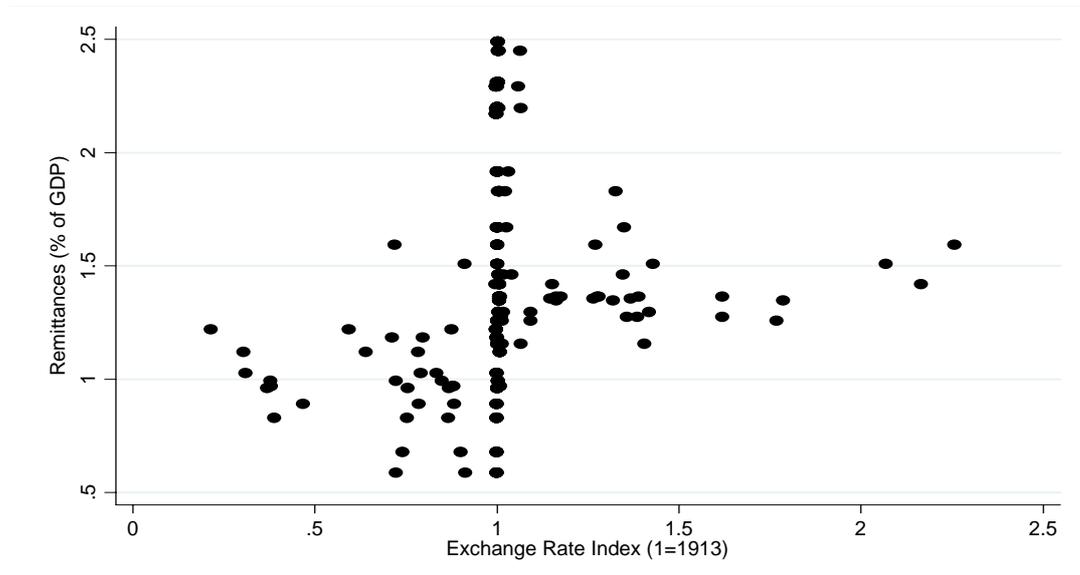
Notes: Robust standard errors in parenthesis. \*\*\* (\*\* [\*] ) Coefficient significant at 1 (5 [10] ) %.

A more significant concern has to do with the potential for reverse causality and measurement error. It does not stretch the mind to imagine that better domestic financial institutions would be able to attract more remittances from abroad. As

already mentioned, many specialized banks were created in this period to attract or improve the efficiency in the transfer of emigrant money. Measurement error of remittances is also related to this, as it is not clear whether better financial institutions actually increased the volume of remittances or just diverted a greater share from informal conduits (hard to estimate accurately) to formal and more quantifiable channels. We take heed of these joint concerns through two methods. We initially lag all independent variables by five years, hoping that the passage of time allows us to identify the correct direction of causality. However, because the relation between independent and dependent variables may act with some lags, we confirm our results by using instrumental variable estimation.

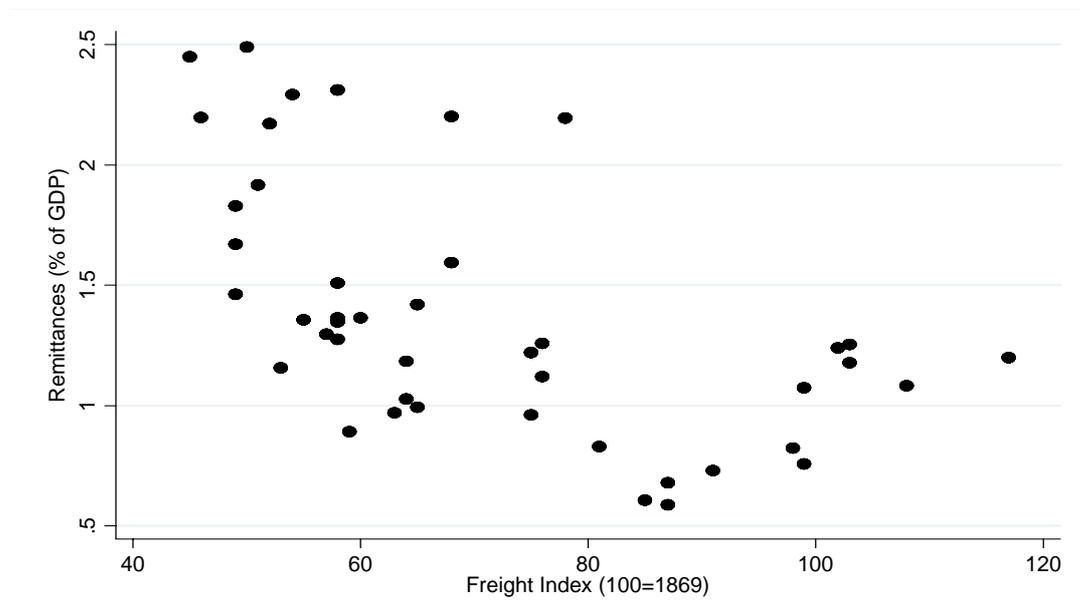
In this specification remittances are instrumented with measures of economic opportunities in the countries of destination and a proxy for the costs of emigration. The first instrument is an index of the exchange rate of the recipient countries' currencies against sterling. The rationale for this variable is that emigrants sometimes postponed sending money when the currency of their country of adoption depreciated significantly – in expectation of a future recovery (Esteves and Khoudour-Castéras, 2009). In a World increasingly dominated by the gold standard (a regime with mean-reverting exchange rates) such expectations were probably rational in the context of an inter-temporal decision-making process. As a matter of fact, Figure 3 suggests a strong relation between exchange rate movements and remittance flows. We weight the currencies comprised in this index by the share of the main destination countries in each nation's emigration flows, as gathered by Ferenczi and Wilcox (1929). The second instrument is a measure of the cost of distance, namely an index of tramp shipping freights compiled by Isserlis (1938). As imperfect a proxy of the costs of transatlantic migration as this may be, it has a strong and negative relation with remittances flows, as shown in Figure 4.

Figure 3: Remittances (share of GDP) and weighted exchange rate indices, 1870-1913



Source: author's calculations (see text).

Figure 4: Remittances (share of GDP) and freight Index, 1870-1913



Source: author's calculations and Isserlis (1938). For each year we plot the average remittance level in the 8 countries of the sample.

Table 10 reports the results for this model adding five lines – for  $R^2$  of the first stage regression, Hansen's J statistic of overidentification, Anderson's canonical correlation statistic (relevance of instruments and for the Cragg-Donald test of weak instruments. Our instruments pass the tests of exogeneity, relevance and weak instruments.<sup>10</sup>

Table 10: Robustness (causality)

| Identification<br>Dependent | Five year lags          |                         | Instrumental variables  |                           |
|-----------------------------|-------------------------|-------------------------|-------------------------|---------------------------|
|                             | M1                      | Deposits                | M1                      | Deposits                  |
|                             | (1)                     | (2)                     | (3)                     | (4)                       |
| Constant                    | 47.4405***<br>(17.0280) | -97.895***<br>(21.6692) | 55.2511***<br>(14.6269) | -167.4650***<br>(18.8731) |
| Log(GDP)                    | -8.5599**<br>(3.3611)   | 19.9752***<br>(4.3454)  | -9.0539***<br>(2.4440)  | 23.3737***<br>(2.9219)    |
| GDP <i>per capita</i>       | 0.5938***<br>(0.1427)   | 0.5417**<br>(0.2307)    | 0.4642***<br>(0.1000)   | 0.8955***<br>(0.1341)     |
| Inflation                   | 0.0099<br>(0.0191)      | -0.0695<br>(0.0432)     | -0.0128<br>(0.0406)     | -0.1465***<br>(0.0563)    |
| Gold standard               | 1.9080***<br>(0.5866)   | 12.0710***<br>(1.2802)  | 2.6107***<br>(0.7911)   | 8.6033***<br>(1.5357)     |
| Exports/ GDP                | 0.1004<br>(0.1439)      | 0.1175<br>(0.2201)      | 0.2452<br>(0.1884)      | 1.0018***<br>(0.1784)     |
| Cur. Account                | 0.1961<br>(0.1371)      | -0.1609<br>(0.1723)     | -0.0636<br>(0.1685)     | -0.3060*<br>(0.1702)      |
| Remittances                 | 0.1018<br>(0.3038)      | 2.3692***<br>(0.5957)   | 0.7000*<br>(0.3701)     | 3.0524***<br>(0.6228)     |
| Country FE                  | Yes                     | Yes                     | Yes                     | Yes                       |
| Year FE                     | Yes                     | Yes                     | Yes                     | Yes                       |
| N                           | 234                     | 264                     | 229                     | 253                       |
| $R^2$                       | 0.898                   | 0.968                   | 0.891                   | 0.967                     |
| F stat (1st stage)          |                         |                         | 14.79                   | 19.52                     |
| Hansen J stat               |                         |                         | 0.981                   | 2.223                     |
| p-value                     |                         |                         | 0.322                   | 0.136                     |
| Anderson can. corr. stat    |                         |                         | 111.637***              | 122.074***                |
| Cragg-Donald F stat         |                         |                         | 57.17**                 | 63.563**                  |

Notes: Robust standard errors in parenthesis. \*\*\* (\*\* [\*]) Coefficient significant at 1 (5 [10]) %.

<sup>10</sup> We use Stock and Yogo's (2002) critical levels for the Cragg-Donald F statistic.

Both identification methodologies sustain the positive and significant impact of remittances on measures of financial development, with the coefficients actually rising in value and significance relative to the base model. Table 11 details the first stage results of the IV estimation, which confirm the strong relation between the remittance level and our instruments.

Table 11: First stage results of IV estimation

| Dependent             | M1                     | Deposits               |
|-----------------------|------------------------|------------------------|
|                       | (1)                    | (2)                    |
| Constant              | -5.5651<br>(4.0113)    | -0.9796<br>(3.5842)    |
| Log(GDP)              | 1.2767**<br>(0.4961)   | 0.6326<br>(0.4738)     |
| GDP <i>per capita</i> | -0.0578***<br>(0.0179) | -0.0630***<br>(0.0194) |
| Inflation             | -0.0039<br>(0.0103)    | -0.0015<br>(0.0092)    |
| Gold standard         | 1.3094***<br>(0.1941)  | 1.4577***<br>(0.1717)  |
| Exports/ GDP          | -0.0632**<br>(0.0275)  | -0.0279<br>(0.0258)    |
| Current account       | 0.0715***<br>(0.0253)  | 0.0489**<br>(0.0209)   |
| Wexch                 | 2.8727***<br>(0.4430)  | 2.7263***<br>(0.4557)  |
| Freight               | -0.0331**<br>(0.0137)  | -0.0312***<br>(0.0105) |
| N                     | 229                    | 253                    |
| R <sup>2</sup>        | 0.758                  | 0.791                  |

Notes: Robust standard errors in parenthesis. \*\*\* (\*\* [\*] ) Coefficient significant at 1 (5 [10]) %. Wexch is the weighted index of exchange rates of destination currencies against sterling, used as instrument (base 1913=1). Freight is the Isserlis's (1938) index of tramp shipping freight, also used as instrument (base 1869=100).

## 5. CONCLUSION

The evidence in this paper furthers our understanding of the economic role of remittance flows during the age of mass migration before World War I. Other than the effects on the demographic composition of the labor force, wage convergence, consumption and savings patterns, and financial stability, we confirm here the positive influence of emigrants' remittances on domestic financial development. The more than proportional estimate of the impact of remittances on measures of the penetration of financial services also underscores the relative size of this impact, as compared with the (less-than-proportional) effect from other foreign financial flows. Our measured results are also larger than the best estimates for the contemporary effect of remittances (the marginal effect on the ratio deposits/GDP is around 1.7/1.8 in our sample, as compared to 0.5/0.6 in Aggarwal, Demirgüç-Kunt and Martínez Peria, 2006), even though the "emerging economies" of the 19<sup>th</sup> century probably started the build-up of their financial sectors from levels of development similar to present day large remittance recipients.<sup>11</sup>

It is likely that the potential for positive spillovers from migration to financial development is today limited by restrictive immigration policies to which pre-1914 peripheral European nations (unlike Asian countries) were relatively spared. However, our findings suggest that public authorities in today's developing countries should try to maximize the impact of remittances by adopting policies aiming to promote financial democracy, that is, policies that facilitate the access to bank service, that provide information about the remittance market, and that ensure greater transparency in the financial system (Orozco and Fedewa, 2006; Terry and Wilson, 2005). Insofar as financial development has positive repercussions in terms of economic growth, such policies should also contribute to accelerating the catch-up process of emigration countries.

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<sup>11</sup> In our sample, total deposits/ GDP averages 30.9% (max 115.9%, min 0.5%). In Aggarwal, Demirgüç-Kunt and Martínez Peria's (2006) study for 1975-2003, the corresponding figures are 29.2% average, max 161.4%, min 1.7%.

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**DATA APPENDIX**

**Money supply (M1)** series (millions of local currency units) were obtained from Komlos (1987) for Austria-Hungary; Kostelenos et al. (2007) for Greece; Reis (1990) for Portugal, and Carreras and Tafunel (2005) for Spain. Data for Finland was kindly provided by Jaakko Autio. For Norway we used the M0 series listed in Eitrheim, Klovland and Qvigstad (2004) since the authors comment that demand deposits were but a small portion of the total money stock (around 2% of M2) before 1914. De Mattia (1990) follows similar arguments in applying a definition of M1 which is actually closer to M0. We use his series for Italy. We were not able to find a M1 series for Sweden.

**Deposits in commercial banks** (millions of local currency units) were collected from Komlos (1987) for Austria-Hungary; Mitchell (2003) for Finland, Spain, and Sweden; Kostelenos et al. (2007) for Greece; Cotula (1996) for Italy; Eitrheim, Klovland and Qvigstad (2004) for Norway, and Reis (1990) for Portugal.

**Deposits in savings banks** (million of local currency units) have the same sources except for Austria-Hungary (Mitchell 2003), and for Finland, for which we used statistics gently communicated by Risto Herrala and Vappu Ikonen. There is also no series for Portugal.

**Nominal GDP** figures (in million local currency units) were gathered from the following sources: Flandreau and Zumer (2004) for Austria-Hungary; Hjerppe (1989) for Finland; Kostelenos et al. (2007) for Greece; Istat (1957) for Italy; Mitchell (2003) for Norway; Nunes, Mata, and Valério (1989) for Portugal; Carreras and Tafunel (2005) for Spain, and Johansson (1967) for Sweden.

**Population** series (thousands) were taken from the following sources: Mitchell (2003) for Austria-Hungary; Maddison (2003) for Finland, Italy, Norway, and Sweden; Kostelenos et al. (2007) for Greece; Valério (2001) for Portugal, and Carreras and Tafunel (2005) for Spain.

**Foreign trade statistics** (in millions local currency units) were taken from Mitchell (2003) with the following exceptions. For Finland we used Hjerppe (1989), for Portugal Valério (2001), and for Spain Carreras and Tafunel (2005).

**Inflation** was calculated from price series (usually GDP deflators) taken from the following sources: Flandreau and Zumer (2004) for Austria-Hungary, Hjerppe (1989) for Finland, Kostelenos et al. (2007) for Greece, Istat (1957) for Italy, Michell (2003) for Norway, Valério (2001) for Portugal, Carreras and Tafunel (2005) for

Spain, and Johansson (1967) for Sweden.

**Gold standard** participation was coded from Flandreau and Zumer (2004) and Meissner (2005).

**Exchange rates** (number of local currency units per pound sterling) were calculated from Schneider *et al.* (1991) and Flandreau and Zumer (2004) with the following exceptions – Autio (1992) for Finland; Lazaretou (1993) for Greece; Eitrheim, Klovland and Qvigstad (2004) for Norway, and Carreras and Tafunel (2005) for Spain. In the case of Sweden we used the series prepared by Håkan Lobell and available from the Bank of Sweden website at:

<<http://www.riksbank.se/templates/Page.aspx?id=27402>>.

**Political variables** were taken from the database of the Polity IV project available at: <<http://www.systemicpeace.org/polity/polity4.htm>>

**Creditors rights** is an index compiled by Djankov, McLiesh and Shleifer (2006) available at:

<<http://www.economics.harvard.edu/faculty/shleifer/dataset>>

**Exchange rates (instruments)** for the USA, France, Austria-Hungary, Argentina, and Brazil were taken from Flandreau and Zumer (2004).

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